DOCUMENT RESUME

ED 299 118 SE 049 635

AUTHOR Embry, Lynn
TITLE Scientific Encounters of the Insect World. Reading Activities That Explore Nature's Fascinating Insects. A Good Apple Science Activity Book for Grades 4-7.
REPORT NO ISBN-0-86653-424-5
PUB DATE 88
NOTE 68p.
AVAILABLE FROM Good Apple, Inc., Box 299, Carthage, IL (GA1039, $6.95).
PUB TYPE Guides - Classroom Use - Materials (For Learner) (051) -- Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Animal Behavior; *Animals; Basic Skills; Elementary Education; *Elementary School Science; *Instructional Materials; Intermediate Grades; Middle Schools; *Reading Skills; Science Education; Workbooks
IDENTIFIERS *Insects

ABSTRACT

Insects comprise the largest group of animals in the world and newly discovered ones are being added to the list every year. The habits of even the most common insects are interesting to observe. This book introduces insects that many children will be able to observe in their environments. Interesting information is presented to help children learn about each species. A reading skills sheet accompanies each selection with attention to comprehension, vocabulary, and dictionary skills. An activity page is included with each selection which may be used for fun or to provide for individual differences within the classroom. Topics include: insect anatomy; ant lions; bumblebees; cicada killers; click beetles; dragonflies; crickets; froghoppers; honey ants; hover flies; oil beetles; moths; butterflies; termites; larvae; tiger beetles; walking sticks; and whirligigs. An answer key to activities is provided. (CW)

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A Good Apple Science Activity Book for Grades 1-7

ED299118

GOOD APPLE

SCIENTIFIC ENCOUNTERS OF THE INSECT WORLD

Reading Activities That Explore Nature's Fascinating Insects

BY LYNN EMBRY

ILLUSTRATED BY PATRICK SHANE WILSON

U.S. DEPARTMENT OF EDUCATION
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Scientific Encounters of the Insect World

by
Lynn Embry

illustrated by Patrick Shane Wilson

Cover by Vanessa Filkins

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ISBN No.0-86653-424-5

Printing No. 987654321

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Introduction

Insects comprise the largest group of animals in the world, and newly discovered ones are being added to the list every year. They come in a variety of shapes, sizes, and colors. The habits of even the most common insects are interesting to observe, and the unfamiliar species are often quite amazing.

The selections in this book introduce insects that many children will be able to observe firsthand in their environments. Interesting information is presented to acquaint the students with each species.

A reading skills sheet accompanies every selection with attention to comprehension, vocabulary, and dictionary skills. An activity page is included with each selection. These may be used for fun or to provide for individual differences within the classroom. It is hoped that the selections will delight students, help develop reading skills, and create an interest in the fascinating world of insects.

Exploring the Insect World

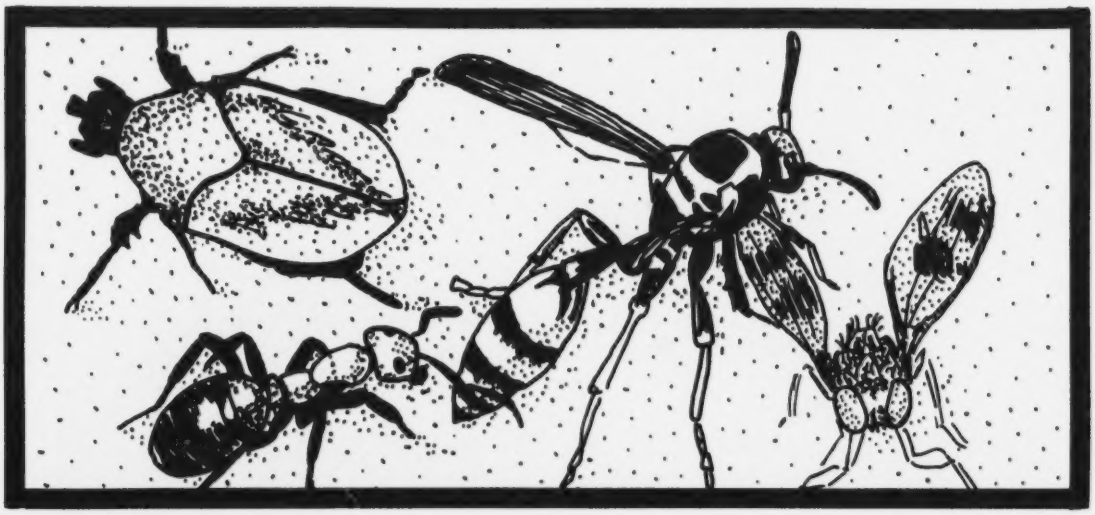
Scientists do not know how many kinds of insects there are, but it is known that insects comprise the largest group of animals in the world. Over half of all living things are insects. About 700,000 different species of insects have been classified, but new ones are being discovered each year. Entomologists, scientists who study insects, continue to gather information about insects and their habits.

Insects differ in many ways, but all adult insects have certain common features. All have three main body sections consisting of a head, a thorax, and an abdomen. In fact, the name *insect* comes from a word meaning "in sections." The head of an insect has a pair of antennae that serve as sensory organs. The antennae help the insect to smell and feel. In some insects the antennae are used for hearing and tasting. The middle section of the insect's body, the thorax, contains six legs and one or two pairs of wings. The third part is the abdomen, the tail section of the insect.

Before reaching the adult stage, an insect undergoes radical changes. Insects in the immature stages of development are not always easily recognized. Some have three pairs of legs and three main body sections, but some have no legs at all. As insects go through different stages of metamorphosis, their appearance changes from egg to adult. Those insects that go through complete metamorphosis develop from egg, to larva, to pupa, to adult. Those that go through gradual metamorphosis develop from egg, to nymph, to adult.

The life span of an insect varies greatly among different species, but most have a very brief existence. Mayflies live less than one day. Butterflies live a few days or weeks. Other insects live one season, but some live several years.

While many insects are beneficial, others are detrimental to man's health. Some harmful insects spread disease germs, damage crops, and destroy homes. Entomologists are working to discover better ways of controlling insect pests while protecting man and safeguarding the balance of nature.

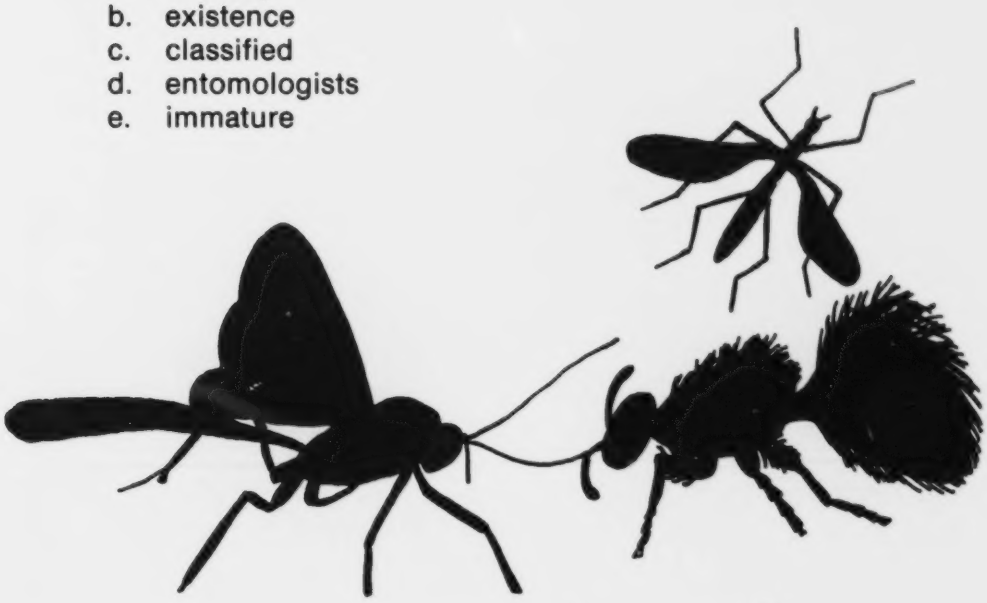


Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. the metamorphosis of insects
   b. the common features of insects
   c. the life span of insects
2. Insects are the
   a. most harmful group of animals in the world
   b. most easily recognized group of animals in the world
   c. largest group of animals in the world
3. The thorax is the part of an insect that
   a. contains the wings and legs
   b. contains the eyes
   c. contains the antennae
4. A word in the selection that means to "include within a group" is
   a. comprise
   b. span
   c. species
5. A word that means the opposite of "beneficial" is
   a. metamorphosis
   b. radical
   c. detrimental
6. Divide the following words into syllables. Underline the syllables that receive the primary stresses.
   a. sensory
   b. existence
   c. classified
   d. entomologists
   e. immature

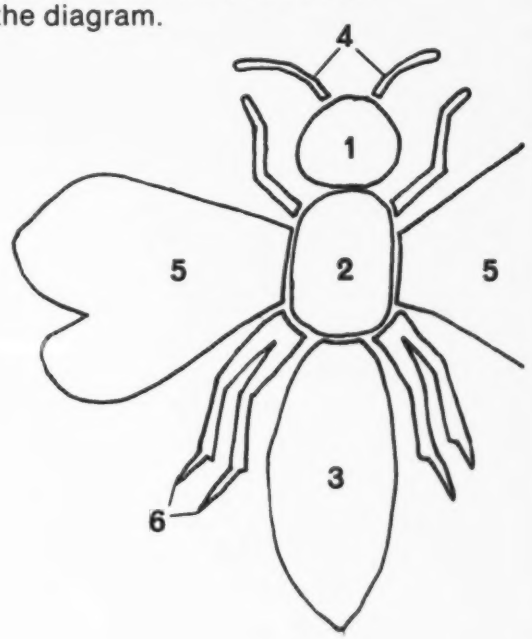


Name _____

Parts of an Insect

Directions: Unscramble the letters to spell the names of the parts of an insect that match the numbers in the diagram.

1. edha _____
2. hxtroa _____
3. bemdaon _____
4. neaaentn _____
5. igwns _____
6. segl _____



Directions: What is your favorite insect? Draw and label the main parts of your favorite insect.

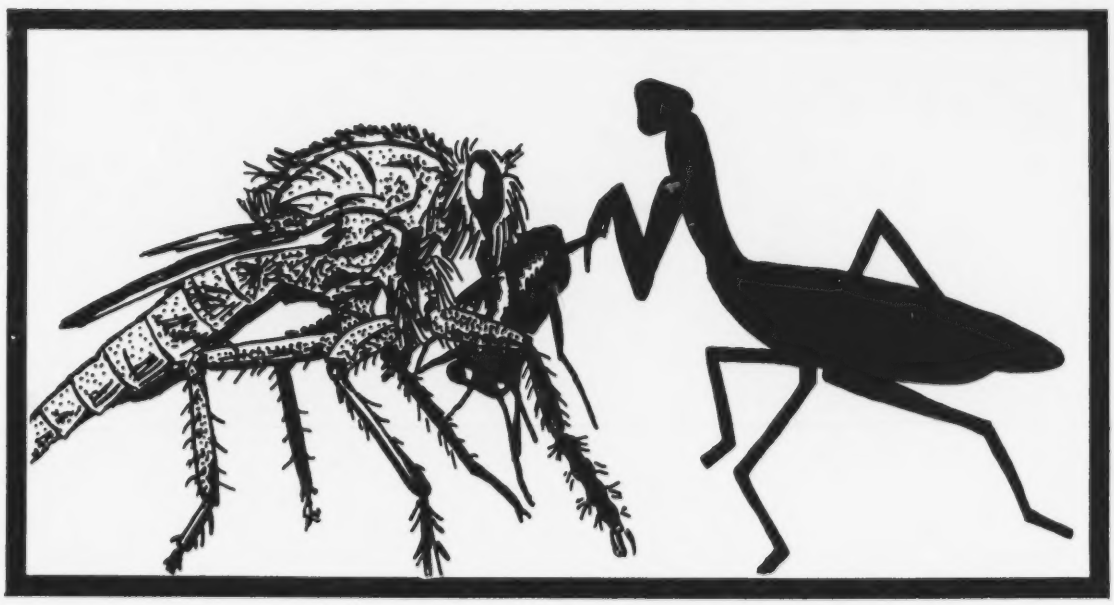
Fascinating Insects

The insect world is filled with many remarkable species. Insects vary dramatically in appearance, size, strength, habit, and method of defense. It is impossible to know all the insects. Man is still classifying newly discovered ones. Interesting facts are being discovered as data about newly discovered insects is compiled. Even the most familiar insects have interesting features and habits, making them worthy of study.

Insects engage in many fascinating practices. The potter wasp constructs a clay pot, lays eggs inside, and fills it with caterpillars. An African grasshopper, Cyracanthacris rubella, catches and kills mice. The bloody-nosed beetle secretes a red substance when touched on its head. Termites tap information to sound warnings. Some beetles lift more than eight hundred times their own weight. The larva of the petroleum fly lives in a pool of crude petroleum, an ingredient often used in pesticides. Some ants, beetles, and African termites cultivate fungi for food. Some ants keep pastures of aphids which they tend for their honeydew. A study of insects reveals many intriguing facts.

Life for an insect is fragile. Basic needs must be provided for daily. Each species must avoid being preyed upon by other creatures, and it must succeed in finding a sufficient supply of food.

In order to survive, insects protect themselves in different ways. The bombardier beetle releases an irritating vapor as a smoke screen so it can escape. The robber fly attacks with a piercing beak and drains the prey of its body fluids. The assassin bug, waiting in ambush, attacks with sticky legs and sharp beak. The praying mantis captures prey with strong forelegs and devours them with powerful jaws. The ant lion injects poison with hollow needlelike jaws. Each species has it own way of surviving. Many surprising facts await discovery as the fascinating realm of insects is explored.



Name _____

Skills Check

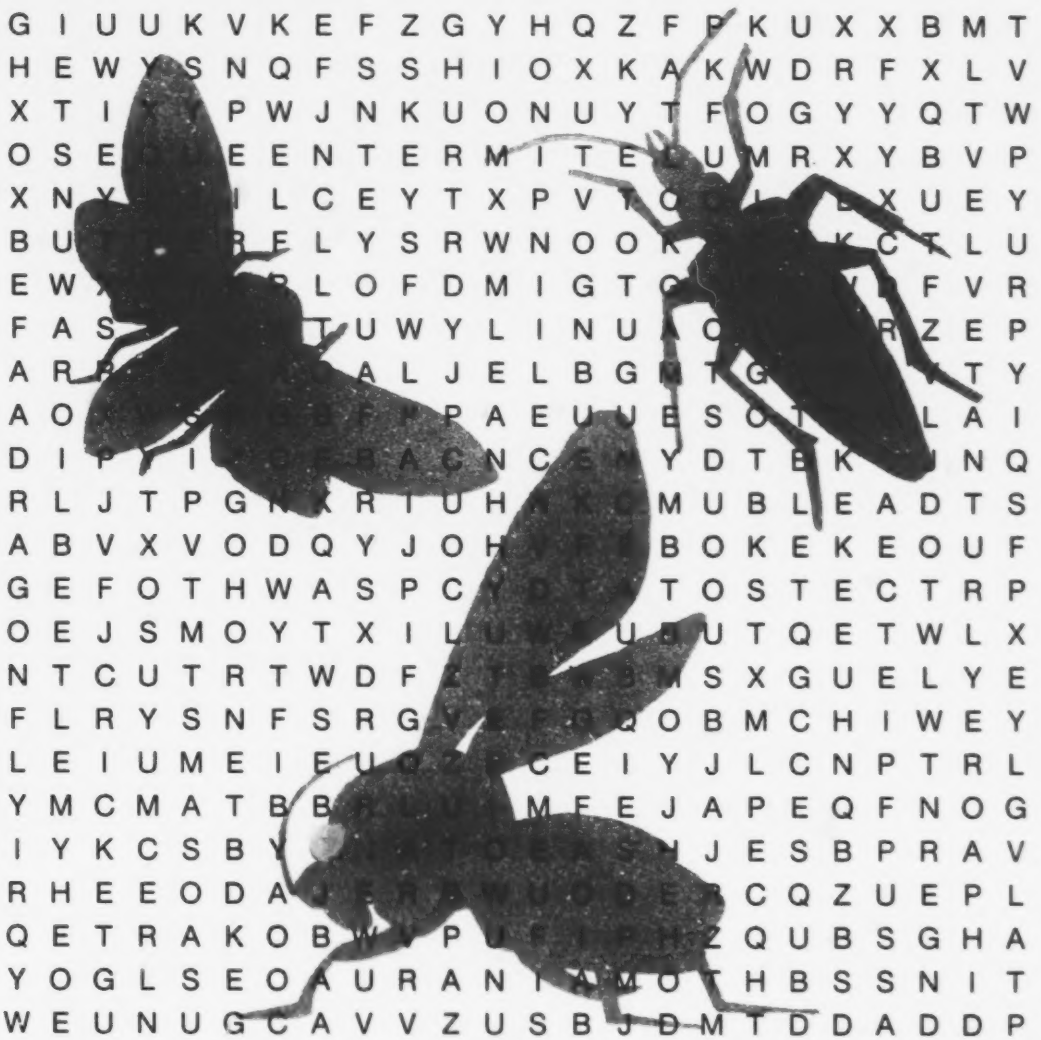
Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. how insects survive
   b. interesting habits of insects
   c. ways to study insects
2. Newly discovered insects are
   a. extremely rare
   b. impossible to find
   c. being classified
3. A word in the selection that means "adequate" is
   a. intriguing
   b. sufficient
   c. worthy
4. A synonym for "delicate" is
   a. fragile
   b. remarkable
   c. crude
5. Read the phonetic spellings of certain words taken from the selection. Write the correct spelling of each.
   a. měth′-əd _____
   b. sə-fĭsh′-ənt _____
   c. ĭn-grēd′ ē-ənt _____
   d. frăj′-əl _____
   e. krüd′ _____
   f. səb′-stəns _____
   g. stĭk′-ē _____
   h. vā′-pər _____
   i. kəl′-tə-vāt _____

Name _____

Insects from A to Z

Directions: The names of twenty-six insects are hidden in the puzzle. You may look horizontally, vertically, and diagonally. Circle your answers.



WORD BANK

aphid	butterfly	cricket	dragonfly
earwig	flea	gnat	hornet
ichneumon fly	June bug	katydid	ladybug
mosquito	net-winged beetle	oil beetle	potato beetle
queen termite	robber fly	stone fly	tumblebug
urania moth	velvet ant	wasp	xylocopa
yellow jacket	zebra butterfly		

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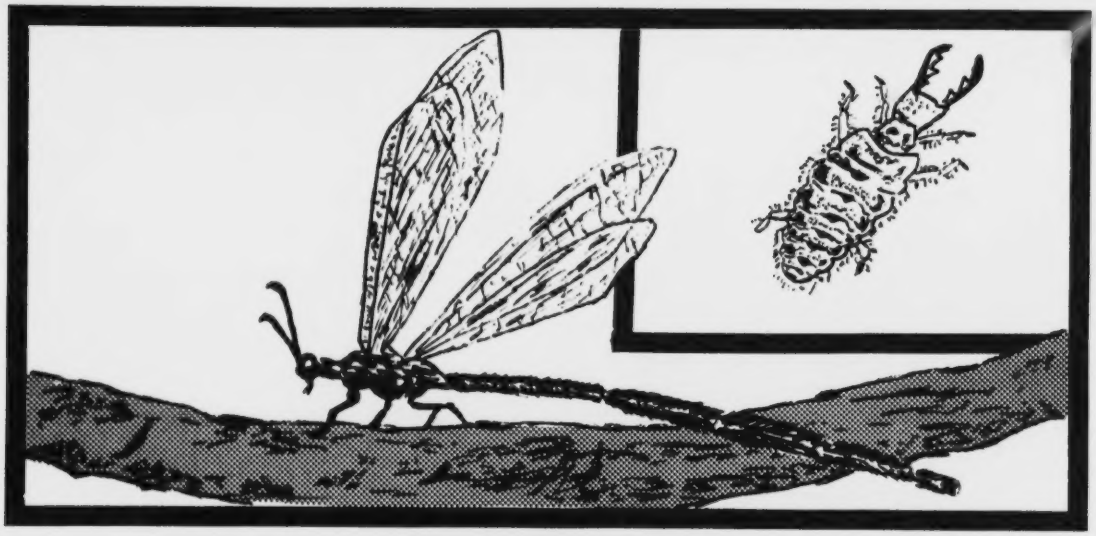


Ant Lion

An interesting predator of the insect world is the ant lion (Myrmeleontidae) in its larva stage. Also known as the doodlebug, the ant lion was named for its predacious manner of hunting ants. The ant lion has an oval body about ten millimeters long with a distinct head containing long, powerful jaws. Its body is covered with bristles. Three pairs of legs extend from its body, but it can only use them to walk backwards. The ant lion is found in many parts of the world including the United States, particularly in locations where dry, sandy soil abounds.

The ant lion has strong jaws that it uses to capture ants and other prey. Rather than pursue its prey directly, the ant lion first prepares a trap. It crawls backward in a circular pattern in sandy soil. As it crawls, it digs a funnel-shaped hole. It digs deeper as it spirals toward the center, throwing out soil with its head. When the trap is about one or two inches in diameter and a couple of inches deep, the ant lion hides in the hole. It buries itself so that only its jaws are exposed. There it lies in wait for unsuspecting prey.

The funnel-shaped trap is an ideal means for capturing a meal. Not all species of the ant lion prepare a trap, but many do resort to utilizing a tiny funnel-shaped pit. When ants or other small insects approach the rim of the funnel, the sandy soil breaks lose, causing the insect to fall into the waiting jaws of the ant lion. If the insect is able to regain its foothold and climb toward the top, the ant lion hurls a grain of sand at the escaping prey. The sand usually causes more soil to fall, making the insect fall deeper into the hole.

The ant lion locks onto its prey with its powerful, curved jaws and injects the ant or insect with a poison. It then drains the insect of its vital fluids. After ingesting the fluids, the ant lion tosses the lifeless body out of the trap.

After a short period of time, the ant lion or doodlebug spins a cocoon around itself. Inside the cocoon the miracle of metamorphosis occurs. When the time is right, a beautiful insect with four delicate wings emerges. The cycle is repeated as the adult lays eggs in the sand, eggs that develop into the larvae of the ant lion.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. the adult ant lion
   b. the larva of the ant lion
   c. the pupa of the ant lion
2. The ant lion is also called the
   a. damselfly
   b. doodlebug
   c. lionfly
3. A word in the selection that means "essential" is
   a. vital
   b. distinct
   c. predacious
4. A word that means "taking into the body" is
   a. emerging
   b. utilizing
   c. ingesting
5. Write the root word for each of the following words:

a. powerful	_____	f. lifeless	_____
b. covered	_____	g. unsuspecting	_____
c. causes	_____	h. particularly	_____
d. regain	_____	i. capturing	_____
e. directly	_____	j. including	_____

6. Circle the accented syllable in each word.

a. metamorphosis	e. escaping
b. delicate	f. pursue
c. locations	g. predacious
d. diameter	h. circular

Name _____

Doodlebug Doings

The doodlebug is clever in its method of trapping predators from its haven of safety. Curious children have been known to try to lure the doodlebug from its burrow with broom straws and verses.

How would you entice a doodlebug out of its hole? Explain your strategy below.

Bumblebee

According to laws of aerodynamics, the bumblebee is an insect that should not be able to fly. Its weight, size, and body shape in relation to its wingspread rules out its ability to fly. However, the bumblebee does indeed fly. It flies about performing a beneficial service as it gathers pollen and nectar from clover, honeysuckle, and many flowering plants.

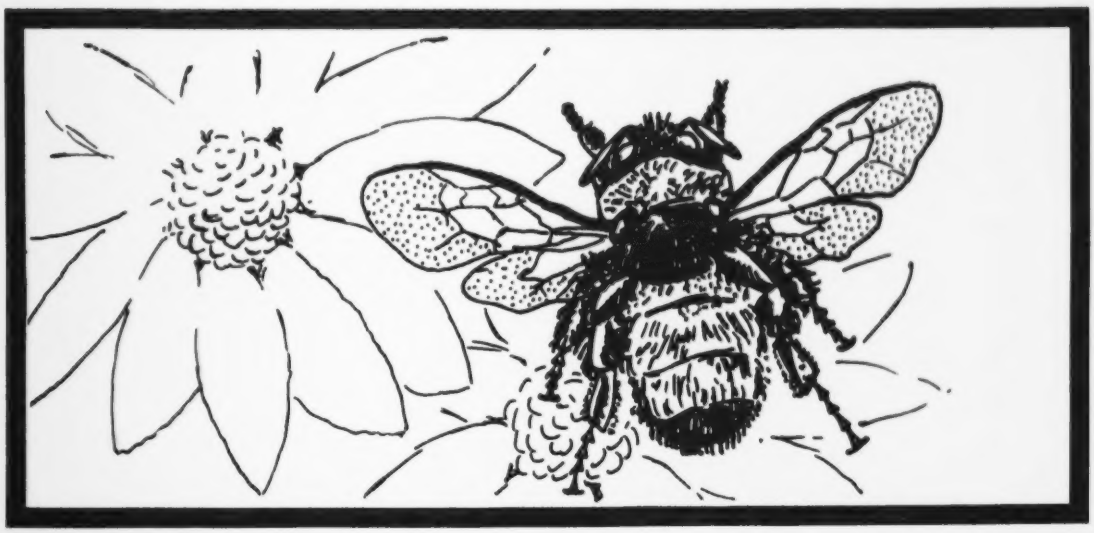
The bumblebee is a large yellow and black bee with stiff hairs on its abdomen. The bumblebee queen may be observed in the spring flying low over the ground, buzzing about, crawling among leaves and grass, searching for a suitable place to build a nest. It may find an abandoned mouse nest or a hollowed place in the ground. Once the site is chosen, the queen bumblebee collects material and begins construction of the nest. There is competition among the bumblebees for nest sites, and some nests are taken over by bees that fight for the nest site.

The bumblebee queen is the only member of the colony that lives through the winter. The others in the colony are the drones or male bees, the female bees, and the workers. The female bees become queens when they are fertilized.

Using the wax scales beneath her abdomen, the queen builds a waxen cell in the nest. Then she piles moss, grass, and other materials about the entrance. She lays her eggs in the nest and seals them with wax.

The queen gathers pollen and mixes it with wax. She constructs a honey pot and fills it with honey for a supply of food when weather is bad. Then she sits on the eggs, beginning the incubation process. When the eggs hatch, the queen feeds the larvae and keeps them warm. When the larvae are grown, they spin cocoons and hatch as worker bees.

The worker bees gather pollen, build cells, and feed the larvae. The queen then devotes her time to laying eggs. By the end of summer, male and female bees develop. By fall the colony disperses, and the fertilized females spend the winter alone, ready to emerge in the spring and begin a new colony. The old queen and the workers soon die, but the buzz of new bumblebees soon fills the air as the cycle of life continues.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. the aerodynamics of the bumblebee
   b. the habits of the bumblebee
   c. the home of the bumblebee
2. A bumblebee competes for
   a. honey
   b. a nest site
   c. wax
3. The nest of the bumblebee is built by
   a. the queen
   b. the workers
   c. the drones
4. A word in the selection that means "helpful" is
   a. service
   b. beneficial
   c. suitable
5. A synonym for "scatters" is
   a. disperses
   b. mixes
   c. devotes
6. Number each group of words in alphabetical order.

___ devotes	___ colony
___ develop	___ constructs
___ drones	___ competition
___ disperses	___ cycle

Name _____

Project Bumblebee

Directions: According to the principles of aerodynamics, the bumblebee is not supposed to be able to fly. Its wings are too small in proportion to its body size and weight. Apparently, it doesn't know that!

Your challenging assignment is to interview the amazing bumblebee. Can you succeed in discovering its secret for flight? Write your interview in the space below.

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Cicada Killer

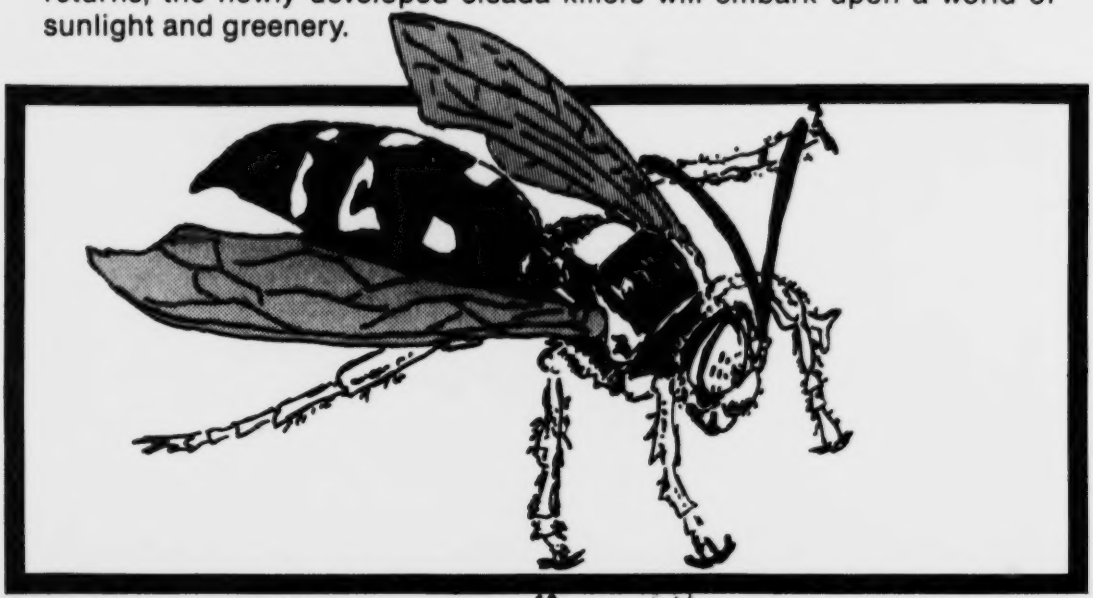
One of the most fearsome wasps is the cicada killer. Sometimes called the king hornet, the cicada killer is a black and yellow insect with a ferocious reputation. It spends its summer digging in the ground, constructing burrows, and preparing for its future brood. The cicada killer is a digger wasp, a hunter specializing in paralyzing and storing prey in underground burrows.

Although the cicada killer hunts cicadas, stout-bodied insects with blunt heads and transparent wings, it does not eat them itself. It feeds only on flower nectar, but the cicadas are needed as food for the larvae of the cicada killer. The cicada killer locates a cicada, quickly pounces upon it, and drops to the ground with it. The cicada struggles for its life, but it soon falls victim to the sting of the cicada killer. The poison of the sting paralyzes the cicada, but does not kill it.

Getting the cicada to the wasp's burrow is not an easy task. The cicada killer lifts its load and flies home with it. Sometimes it must stop, readjust its load, and struggle under the burden of the weight. When it reaches the entrance to the burrow, the female cicada killer drops the cicada and enters the burrow. After inspecting the interior of the burrow, she returns to the outside and pulls the cicada inside. She places it in the nursery. The cicada is not dead, only paralyzed. That is nature's way of delaying decomposition of the food before it is needed. The cicada killer then lays an egg on the underside of the cicada before embarking on another hunting episode. Within a few days the larva emerges from the egg and begins eating on the cicada.

Throughout the summer the cicada killer repeats the hunting episode, adding to the nursery, hunting cicadas, and laying eggs. The larva that hatches from each egg feeds on the cicada. When the food is gone, the larva spins a silken cocoon around its body. By the time spring arrives, the adult cicada killer is ready to emerge from the cocoon and fly off in search of flower nectar.

When cold temperatures arrive, the adult cicada killers freeze, but underground the cycle of life continues in the burrow. When warm weather returns, the newly developed cicada killers will embark upon a world of sunlight and greenery.

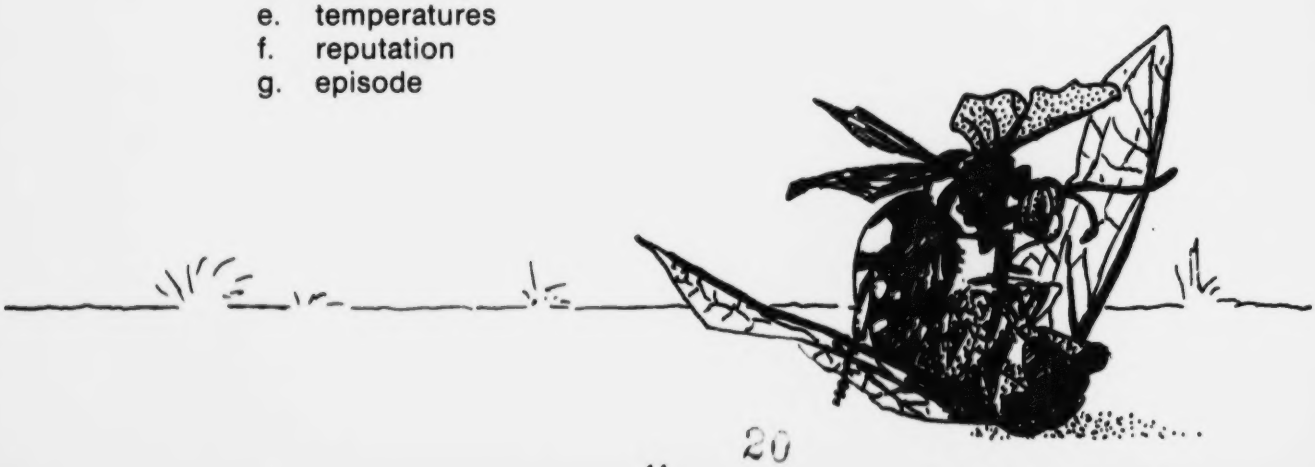


Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a predatory wasp
   b. a stout-bodied insect
   c. a cicada larva
2. The cicada killer preys upon
   a. a variety of insects
   b. the digger wasp
   c. the cicada
3. The adult cicada killer feeds upon
   a. cicadas
   b. flower nectar
   c. cicada larvae
4. A word in the selection that means "going forth" is
   a. embarking
   b. hunting
   c. inspecting
5. A word that means "rotting or breaking down" is
   a. blunt
   b. delaying
   c. decomposition
6. Divide the following words into syllables:
   a. nectar
   b. greenery
   c. paralyzes
   d. specializing
   e. temperatures
   f. reputation
   g. episode



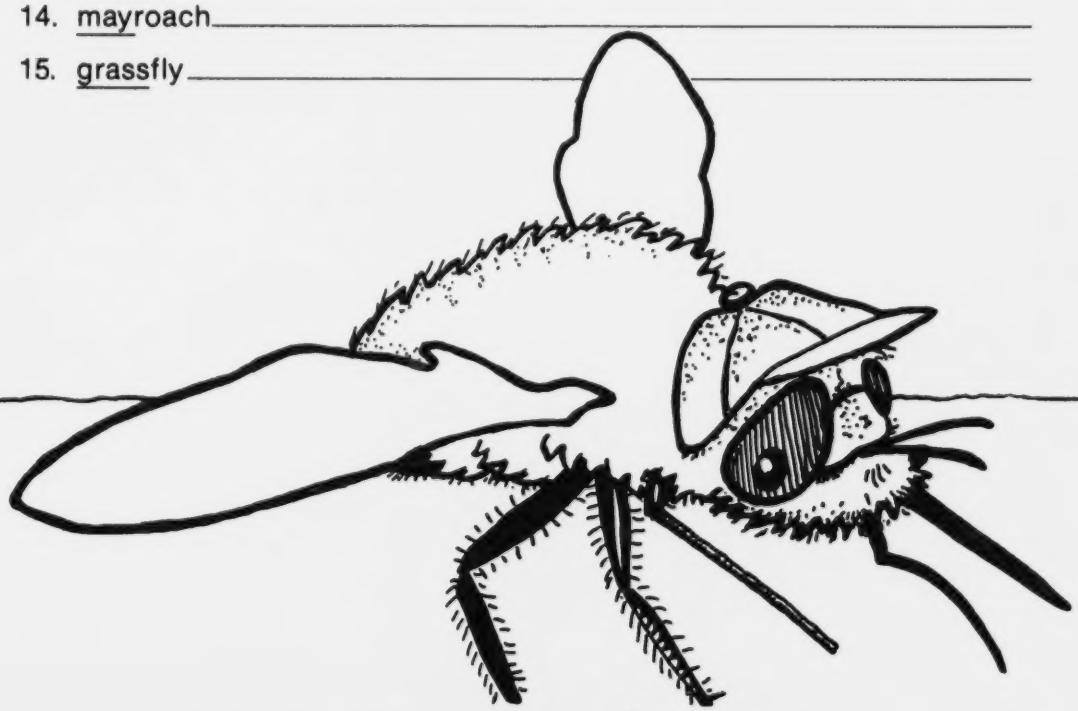
20

Name _____

It's a Zoo!

Directions: The names of fifteen insects have been mixed in strange ways. The underlined part of each name belongs with the last part of one of the other names. Write the correct names in the spaces below.

1. horsehopper _____
2. ladyfly _____
3. housebug _____
4. bumblefly _____
5. dragonbug _____
6. shieldhopper _____
7. butterbug _____
8. honeyfly _____
9. cockfly _____
10. firebee _____
11. frogfly _____
12. stinkfly _____
13. beebee _____
14. mayroach _____
15. grassfly _____



Click Beetle

The acrobat of the insect world is the click beetle, a member of the family Elateridae. When placed on its back, the click beetle's legs are too short for it to roll over and walk away without a struggle. Instead, the insect lies still and arches its body, bending the center portion up from the ground. A click is heard, and the insect shoots into the air. It may land upright, or it may have to repeat the process if it lands on its back. Scientists say the click beetle has a hornlike appendage in the thorax that snaps into a special groove, enabling the click beetle to perform this feat. This trick has earned the click beetle several nicknames including skipjack, snapping bug, and spring beetle.

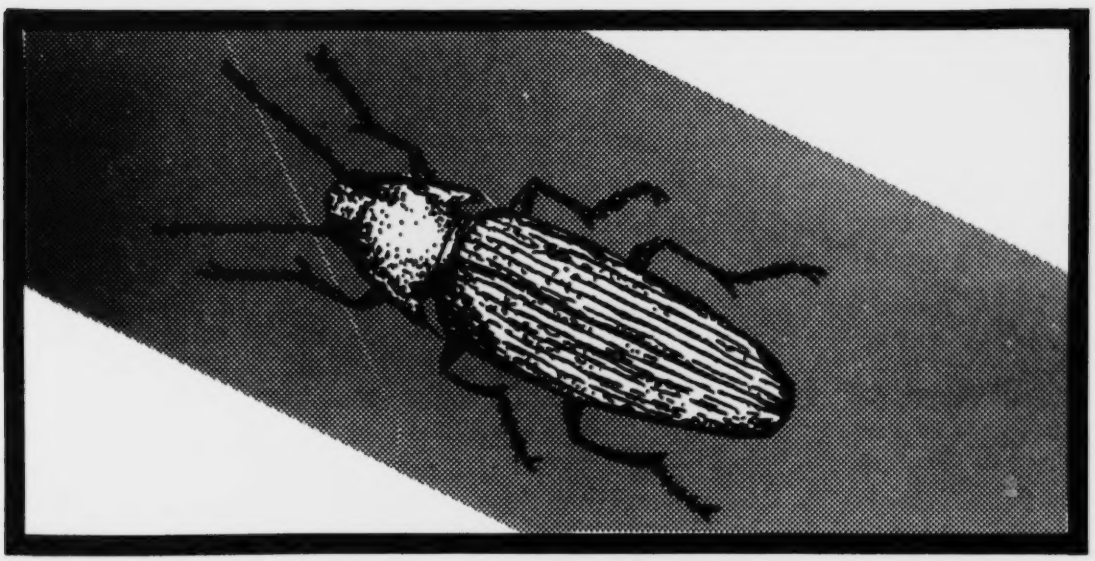
Usually the click beetle uses its acrobatic trick only when in danger. When threatened by an enemy, it may drop to the ground and pretend to be dead. Then it snaps into the air and makes a quick getaway.

The click beetle is usually brown or grayish-black with a thin, flattened body. Some species, however, are brightly variegated shades of yellow, red, black, and white. There are about eight thousand species of the insect, the smallest of which measures less than one-tenth of an inch long. The largest is more than three inches in length.

More than five hundred species of the click beetle inhabit North America. All feed on leaves and grass, mainly at night. They hide during the daytime.

The larvae of the click beetle are called wireworms because of their cylindrical shape and hard bodies. Difficult to control, the wireworm is a pest to most cultivated crops. The wireworm will attack freshly planted seeds, young sprouting plants, and the roots of garden crops. Living in the soil from two to six years, wireworm larvae cause destruction to a variety of crops and grasses.

The life cycle of the click beetle varies from one to four years. First, the egg hatches into the wireworm larva. The larva develops into the pupa, a stage which lasts about a month. Finally, the adult click beetle emerges from the pupa, fully capable of performing its acrobatic antics.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

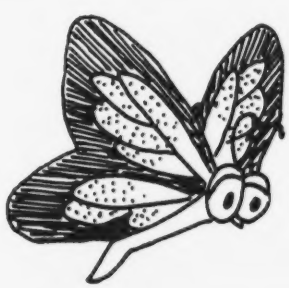
1. The selection is mainly about
   a. a clicking brown wireworm
   b. a camouflaged insect
   c. an acrobatic insect
2. The click beetle
   a. clicks when it arches its body off the ground
   b. clicks its feet together
   c. clicks its antennae together
3. The larvae of the click beetle are called
   a. acrobats
   b. skipjacks
   c. wireworms
4. A word in the selection that means "having different colors" is
   a. cultivated
   b. variegated
   c. shades
5. A word that means "a part attached to something larger" is
   a. feat
   b. appendage
   c. groove
6. Write the root word for each of the words below.
   a. enabling _____
   b. freshly _____
   c. hatches _____
   d. largest _____
   e. varies _____
   f. finally _____
   g. cultivated _____
   h. threatened _____

Name _____

Who Am I?

Directions: The click beetle is quite a jumper, but other insects have claims of their own. Read the clues below and see how many insects you can identify. Unscramble the letters of each insect's name and write it in the blank.

1. I light up the world.
   ryflief _____
2. I have been called the fastest flying insect.
   grdfanoly _____
3. I am a dancing insect.
   yeoehbne _____
4. I am known for my jumping ability.
   hprogpesasr _____
5. I am musically inclined.
   krtiecc _____
6. I live in a colony with a king.
   iemtret _____
7. I make music with a "drum" in my abdomen.
   adccai _____
8. I can hear supersonic pulses of bats.
   tmoh _____
9. I have an extra set of feelers at the end of my abdomen.
   ihivelsrsf _____
10. I beat my wings about 200 times per second when flying.
    yhlofues _____
11. I have wings, but I rarely fly.
    choccakor _____
12. I am a female that devours her mate.
    tdaimn _____



Dragonfly

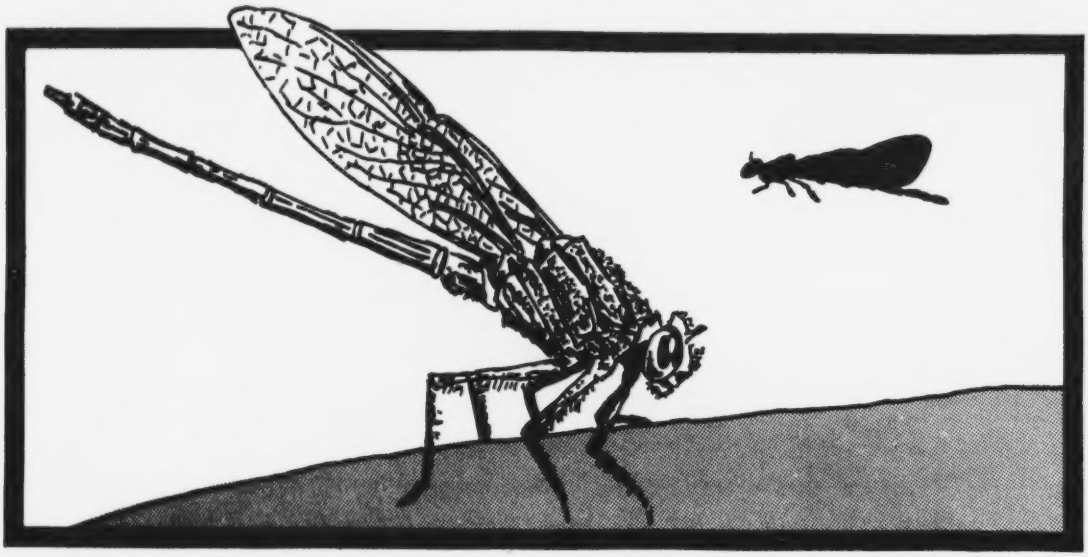
The dragonfly, sometimes called the mosquito hawk, the devil's darning needle, and the snake doctor, is an adept hunter on wing. There are about five thousand known species of the dragonfly. Approximately three hundred of these are found in the United States. Capturing prey while in flight, the dragonfly is also skillful at escaping enemies. Its compound eyes are multifaceted, enabling it to see well. The dragonfly can achieve a speed of more than twenty miles per hour, easily overtaking many insects and fleeing from birds and other enemies. The fastest dragonflies are said to be able to reach speeds near sixty miles per hour. The agile insect can twist, turn, dip, hover, and even move backwards. It uses it techniques to capture a variety of prey.

Making its home near ponds and streams of water, the dragonfly can be identified by its large jeweled eyes, narrow transparent wings, slender abdomen, and swift flight.

The dragonfly has an interesting way of capturing its prey. It pursues mosquitoes and other insects while in the air. It uses its legs to form a kind of net or basket in which to trap insect prey. It flies close to another insect and scoops it into the net. Then it uses its forelegs to put the captured prey into its mouth. Smaller prey are often just snapped up into its jaws as the dragonfly goes swooping by.

The dragonfly has a voracious appetite. It has been known to eat forty houseflies in a couple of hours and still not be satisfied. It serves a beneficial purpose as it rids mosquitoes from the environment. It is said that the dragonfly can consume its weight in insects in only a half an hour.

There are three stages in the life of a dragonfly. The first stage is the egg which is deposited on a twig or stem beneath the surface of water. In about two weeks a nymph hatches from the egg. The nymph lives under the water for about a year, shedding its skin as it outgrows it. After a year, it climbs out of the water and sheds its skin again. This time a spectacular adult dragonfly emerges, with only a few weeks of life left in the cycle.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

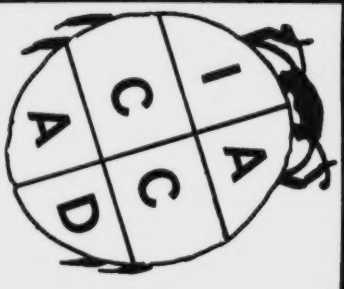
1. The selection is mainly about
   a. the appetite of the dragonfly
   b. the prey of the dragonlfy
   c. the habits of the dragonfly
2. The dragonfly eats
   a. a variety of insects
   b. mosquitoes only
   c. houseflies only
3. The dragonfly captures prey
   a. in the water
   b. in the air
   c. on the land
4. A word in the selection that means "skillful" is
   a. adept
   b. beneficial
   c. spectacular
5. A synonym for "ravenous" is
   a. transparent
   b. voracious
   c. multifaceted
6. If the guide words on the dictionary page are "spear" and "surge," place an X in the blank by each word that should appear on the same page.

___spectacular	___streams
___snake	___swift
___shedding	___skillful
___species	___speed
___snapped	___surface

Name _____

Insect Squares

Directions: The name of an insect can be spelled by correctly arranging the letters in each group below. How many insects can you identify? Write the names below each group of letters.

1 

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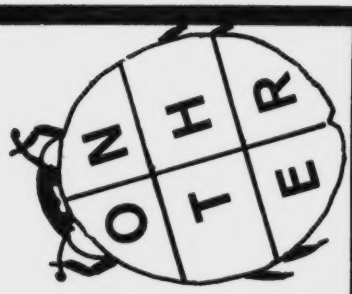
2 

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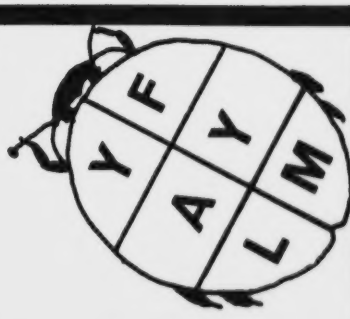
3 

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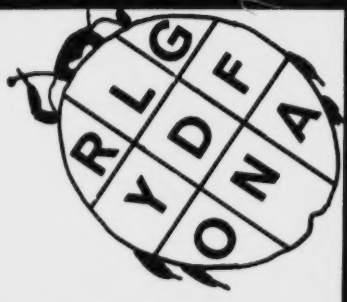
4 

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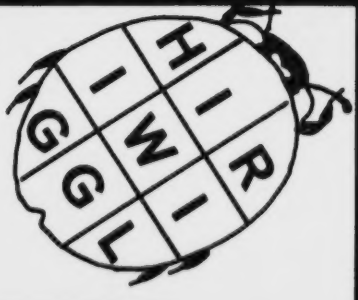
5 

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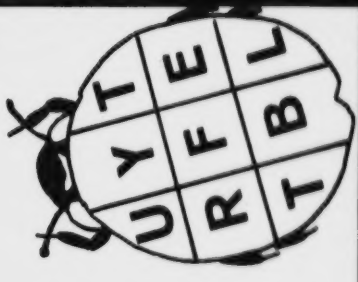
6 

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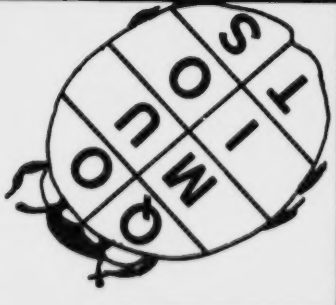
7 

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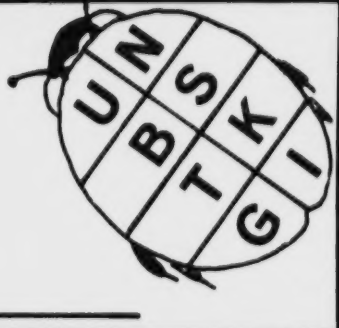
8 

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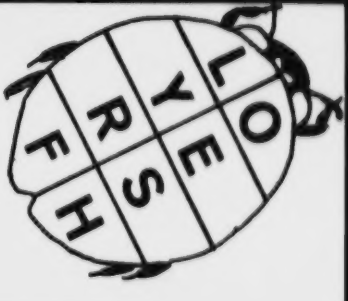
9 

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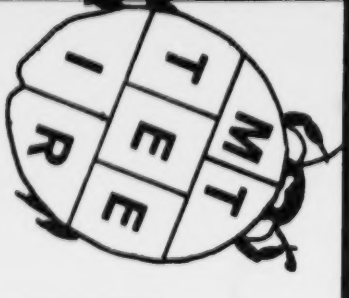
10 

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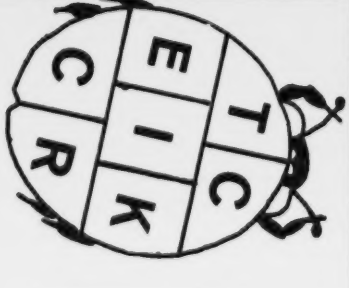
11 

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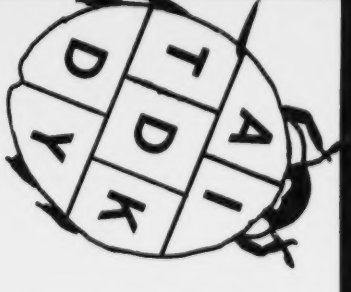
12 

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Field Cricket

One of the best-known music makers of the insect world is the field cricket. The male cricket is the talented one, creating a musical sound by rubbing one wing against the other. The wings are held over his back at about a forty-five degree angle. The right wing functions as a file that rubs the left wing, the scraper. The scraper causes the sound to be magnified. The musical process is known as stridulation, meaning "to creak." The music of the field cricket sounds much like creaking chirps.

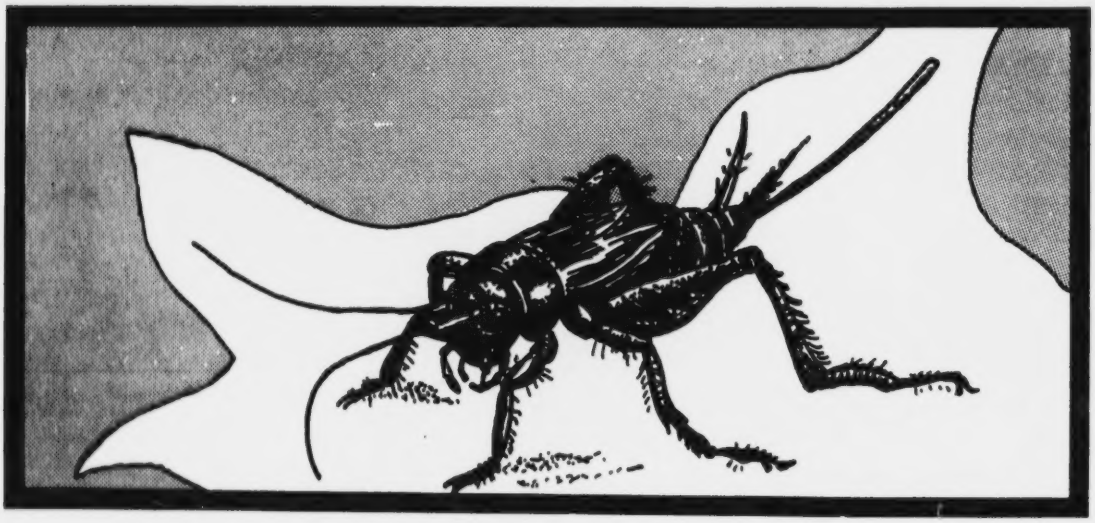
The field cricket is a small black insect seldom more than an inch long with chewing mouth parts, antennae, and two pairs of wings. It may be found in meadows, gardens, fields, and even inside buildings. It is mainly a nocturnal insect, but it is seen sometimes during the daytime.

The field cricket is usually a vegetarian, but it has been known to eat clothing when food is scarce. It has damaged wallpaper and upholstery as well.

A field cricket rarely flies, but it does leap into the air. It frequently jumps about from place to place. Its hind legs are equipped with strong muscles and spines that give it a steady footing.

Crickets have been used as pets for hundreds of years. In China and Japan crickets were once kept inside cages and enjoyed for their musical renditions. Beautiful cricket cages may be found today in museums.

Long ago in China, crickets were kept for their fighting abilities. Cricket fights were a national pastime. Special care was taken in providing the crickets with a diet of mosquitoes, rice, and boiled chestnuts. The crickets were weighed and entered in different fighting classifications. Sums of money were bet on the fighting crickets. To establish a fighting mood, the crickets were provoked by promoters who brushed them with hare-whiskered brushes. Then the crickets were thrown into the arena where the combat usually lasted until the death of one of the crickets.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a large flying insect
   b. a silent black insect
   c. a small chirping insect
2. In China the field cricket was used for
   a. music and fighting
   b. music and food
   c. fighting and food
3. The music of the field cricket is
   a. made by the male
   b. made by the female
   c. made by both male and female
4. A word in the selection that means "an insect's creaking sounds" is
   a. chirping
   b. stridulation
   c. rendition
5. A word that means "aroused to action" is
   a. brushed
   b. provoked
   c. magnified
6. Read the phonetic spellings of certain words taken from the selection. Write the correct spelling of each.
   a. tăl′-ən-təd _____
   b. vĕj-ə-ter′-ē-ən _____
   c. dĭ-grē′ _____
   d. stĕd′-ē _____
   e. krēk′ _____
   f. kăm′-băt _____
   g. ăng′-gəl _____
   h. ə-rē′-nə _____
   i. ăn-tĕn′-ē _____

Name _____

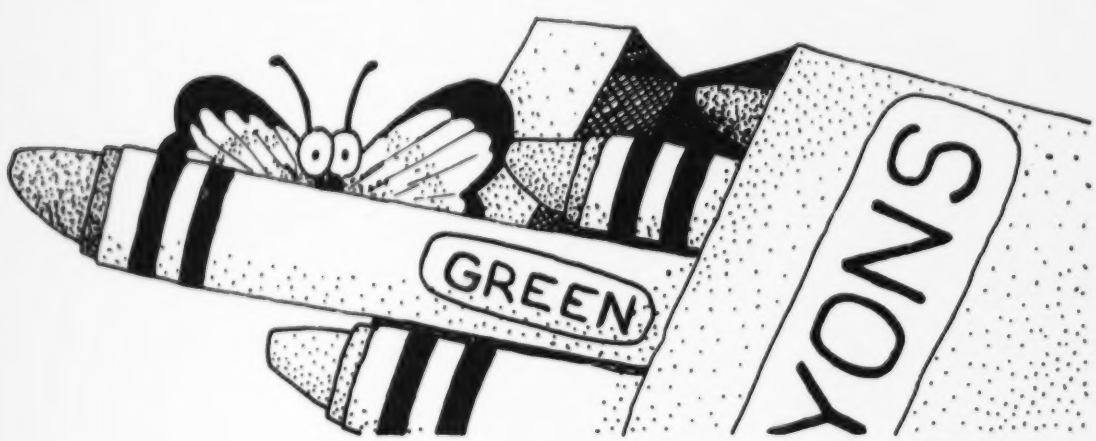
Colors 'n' Critters

Directions: Each group of letters contains the name of a color and an insect. Remove the letters that spell a color and the remaining letters reveal an insect. Write the answers in the blanks.

Example: byuelmblleboewe

REMOVE yellow LEAVE bumblebee

1. bgreeeetlen
   REMOVE _____ LEAVE _____
2. pkaurtypdlied
   REMOVE _____ LEAVE _____
3. bmolsuqueito
   REMOVE _____ LEAVE _____
4. hyoerllneowt
   REMOVE _____ LEAVE _____
5. aoprahnigde
   REMOVE _____ LEAVE _____
6. frleeda
   REMOVE _____ LEAVE _____
7. pmoitnkh
   REMOVE _____ LEAVE _____
8. wbarsowpn
   REMOVE _____ LEAVE _____
9. ctriacnket
   REMOVE _____ LEAVE _____
10. lgardyabyug
    REMOVE _____ LEAVE _____



Froghopper

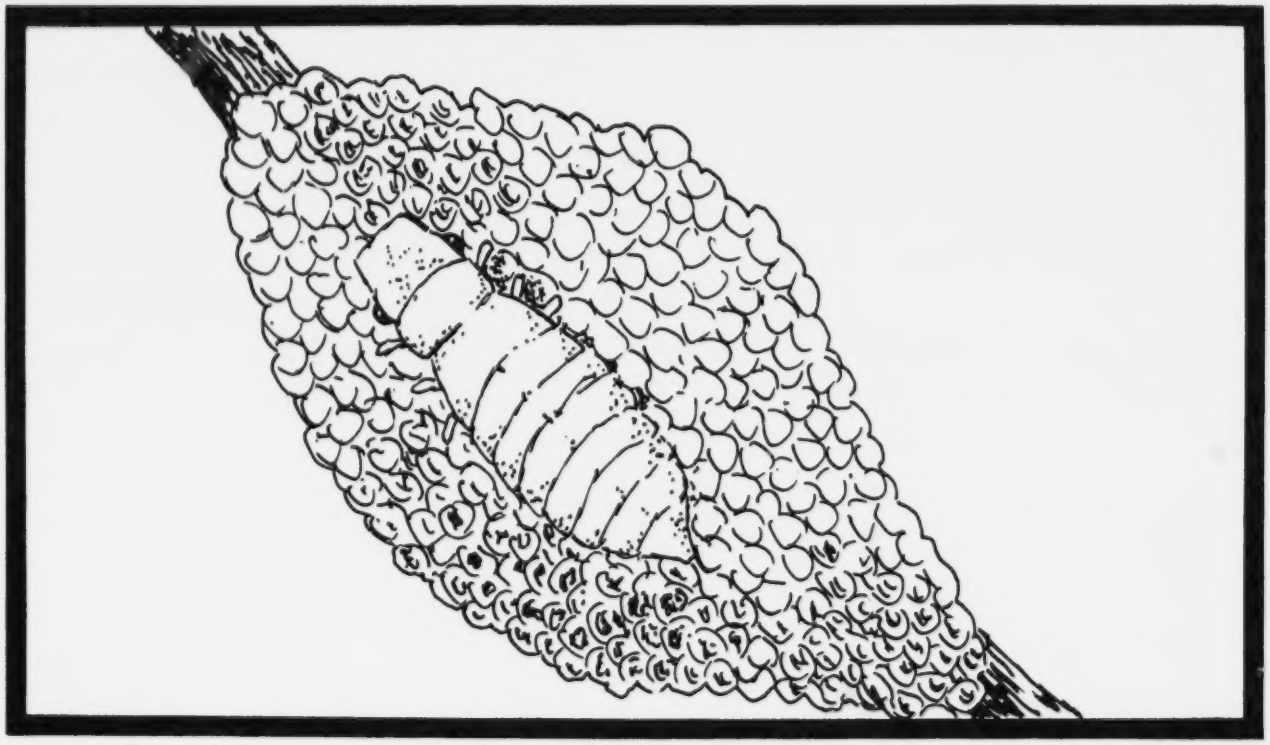
Have you ever noticed a frothy white mass on shrubs and grass during the summer? If so, you may have found the home of a tiny insect called the froghopper. One or several froghopper nymphs, or spittlebugs, may inhabit each frothy mass. The spittle protects the developing insect from parasites and other enemies.

The nymph drains sap from the plant on which it rests, often causing damage to the plant. The sap is quickly dispelled from the nymph's body, mixing with a glandular fluid underneath the abdomen. The fluid contains an enzyme capable of breaking down wax which is also produced by the nymph. The nymph pumps air into the secretion with a special mechanism beneath its tail. Frothy bubbles form and build into a foamy mass called "cukoo spit" that hides the nymph. It is said that the mass hardens into a shell around the developing nymph.

To breathe inside the foamy mass, the spittlebug raises its rear end to the surface or sticks the end of its abdomen into an air bubble in the mass. Air is then able to reach the spiracles on each side of its body.

The nymph lives inside the frothy house until it matures into an adult. Then it flies away, leaving its old shell behind.

The adult froghopper does not produce the froth. Quite a leaper, its jumping habits resemble those of the frog. The froghopper has strong spines on its hind legs that enable it to jump well. It may be observed hopping in meadows and fields of grass, a behavior that earned it the name of froghopper.



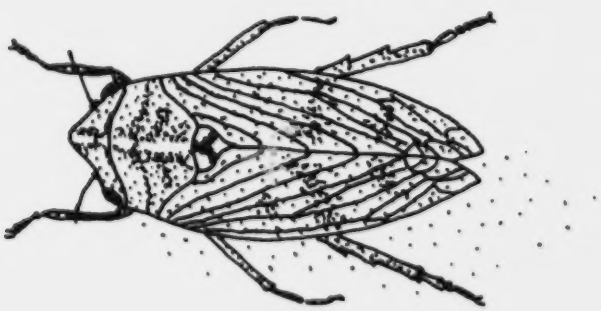
Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. the life of the froghopper nymph
   b. the habits of the adult froghopper
   c. the eating habits of the spittlebug
2. The froghopper nymph is also known as
   a. the spittlebug
   b. the cukoo spit
   c. the planthopper
3. The home of the froghopper nymph is made from
   a. wet grass
   b. glandular secretions
   c. sticks and mud
4. A word in the selection that means "dissipated" or "scattered" is
   a. produced
   b. dispelled
   c. observed
5. Each word has been divided into syllables two different ways. Underline the correct syllabication for each word.

a.	froghopper	frog hop per	frog hopp er
b.	resemble	res em ble	re sem ble
c.	special	spe cial	spec ial
d.	frothy	froth y	fro thy
e.	parasites	par a sites	pa ra sites
f.	enzyme	enz yme	en zyme
g.	mechanism	me cha nism	mech a nism
h.	spittle	spit tle	spi ttle



32

Name _____

A Mighty Message

Directions: Read each statement. Circle the letter under the true column if a statement is true. Circle the letter under the false column if the statement is false. The circled letters spell a message. Write the circled letters in the blanks beiow.

	True	False	
1.	Y	T	Insects are arthropods.
2.	O	H	Insects have six legs.
3.	E	U	A spider is an insect.
4.	M	W	A honeybee is a social insect.
5.	R	A	All insects have wings.
6.	Y	O	Insects have no lungs.
7.	D	N	An insect's skeleton is outside its body.
8.	G	I	Insects are warm-blooded.
9.	S	T	Insects have three main body parts.
10.	C	H	Insects comprise the largest group of animals.
11.	I	O	Some insects have eight legs.
12.	V	N	Entomologists study insects.
13.	G	E	All insects are beneficial to man.
14.	T	R	The thorax contains the insect's head.
15.	O	A	Scientists know how many insects exist.
16.	N	D	Beetles make up the largest group of insects.
17.	O	E	The larva is the adult stage of an insect.
18.	W	K	Some insects are detrimental to man's health.
19.	I	S	Many insects have compound eyes.
20.	D	N	The exoskeleton grows with the insect.
21.	S	D	Most insects live for a short time.
22.	D	E	All insects have been scientifically classified.
23.	C	H	Some insects migrate.
24.	T	A	Some insects can fly backward.

___ ___ _____ _ ___ _____!

Honey Ant

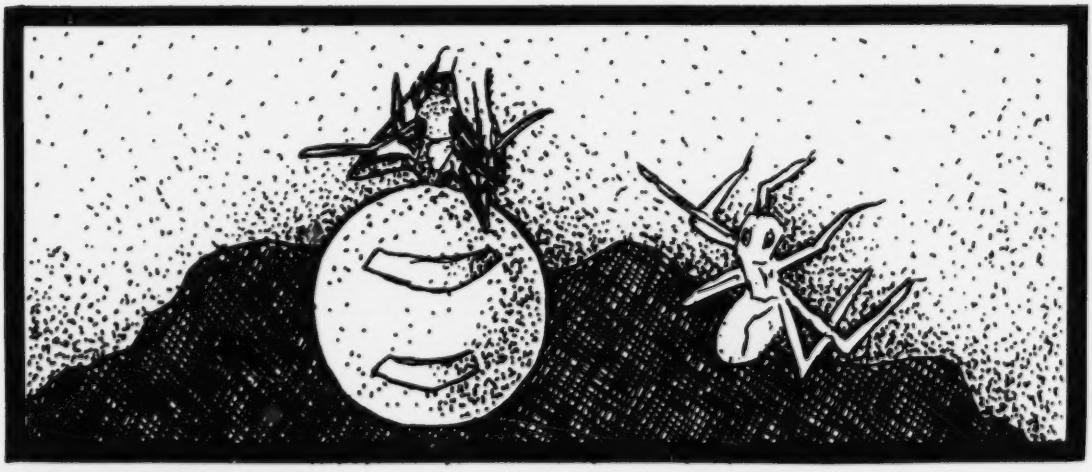
The honey ant, a social insect, has an unusual method of storing its food. Special workers called repletes become living storage vessels for honeydew. Workers collect the sweet honeydew from aphids and oak galls and feed it to the repletes. The abdomens of the repletes become so enlarged from the honeydew that walking becomes impossible. The repletes hang from the top of the underground chamber until the honey ants want some of the stored honeydew. The ants tap the antennae of a replete, causing it to expel some of the honeydew. When the contents are gone, the replete soon dies.

Honey ants are found in Australia, New Guinea, Mexico, and the southwestern United States. The insects tunnel about three or more feet beneath the surface of the ground and construct many lateral pathways and storage rooms. The repletes hang from the ceilings of the storage chambers.

Natives of Australia prize the replete for its honey. Some eat the entire replete, but others only eat the enlarged abdomen of the insect. It is said that the honey is delicious, some preferring it to honeybee honey.

Honey ants in the southwestern United States have been observed participating in battles between colonies for the same food supply. The ants assess each other's size and strength by standing up on their hind legs and sparring. The action is not life threatening, but it seems to be a way of measuring the physical strength of the outsider. The behavior is observed when one colony discovers a particularly appealing source of food. In order to keep a neighboring colony away from the food, a sparring crew is dispatched to keep the colony occupied until the food is gathered. The sparring may go on for several days, usually until the food is collected.

Occasionally a colony will recognize its superior strength over another colony. Then it may invade the home of the opponent, raid the supply of honey, and kill the queen. It has even been known to take the queen's young and make slaves of them. The slaves make life easier for the strong colony by gathering food and caring for the newly born offspring.

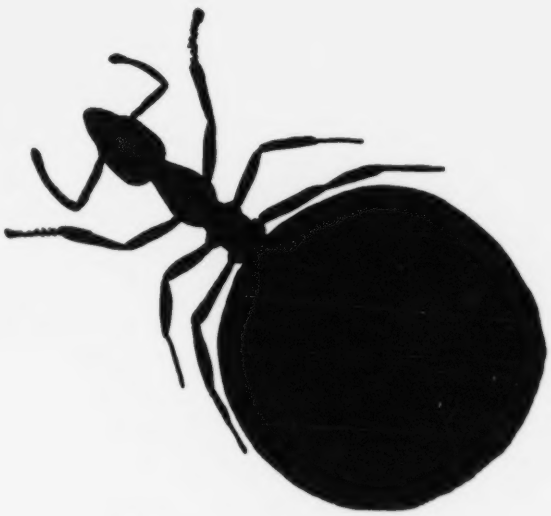


Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

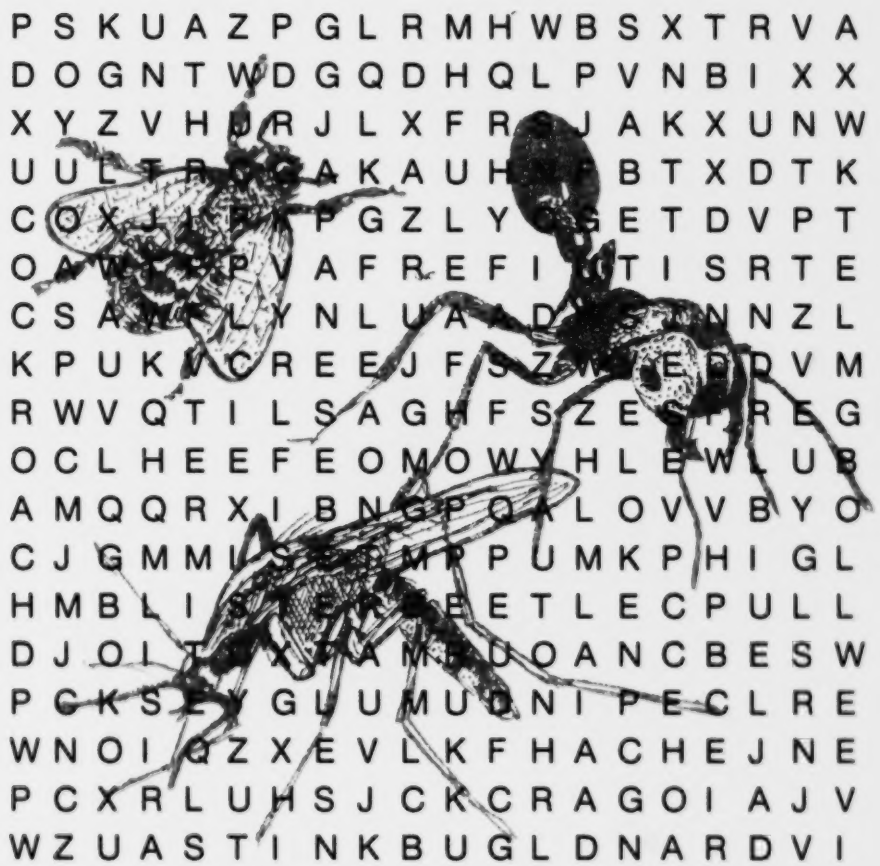
1. The selection is mainly about
   a. a social insect that collects honeydew
   b. a dangerous insect that destroys honeydew
   c. a social insect that makes honeydew
2. The honey ant that stores honeydew is called a
   a. repeat
   b. replete
   c. deplete
3. The honey ant sometimes engages in
   a. swimming
   b. racing
   c. sparring
4. A word in the selection that means "to determine the value of something" is
   a. assess
   b. expel
   c. construct
5. A word that means "hollow containers for holding something" is
   a. chambers
   b. vessels
   c. abdomens
6. Write the number of syllables found in the following words from the selection:
   a. ___ aphids
   b. ___ superior
   c. ___ participating
   d. ___ dispatched
   e. ___ impossible
   f. ___ particularly
   g. ___ lateral
   h. ___ physical



Name _____

A Puzzle of Pests

Directions: Insects are considered pests when they damage crops, transmit diseases, or interfere with man's needs. The puzzle below contains the names of twenty insect pests. You may look horizontally, vertically, and diagonally. Circle your findings.



P S K U A Z P G L R M H W B S X T R V A
D O G N T W D G Q D H Q L P V N B I X X
X Y Z V H D R J L X F R S J A K X U N W
U U L T R C A K A U H F B T X D T K
C O X J I F K P G Z L Y G E T D V P T
O A W E P V A F R E F I T I S R T E
C S A M L Y N L U A A D N N Z L
K P U K V C R E E J F S Z W E D V M
R W V Q T I L S A G H F S Z E S F R E G
O C L H E E F E O M O W Y H L E W L U B
A M Q Q R X I B N G P Q A L O V V B Y O
C J G M M I S E T M P P U M K P H I G L
H M B L I S T E R B E E T L E C P U L L
D J O I T O X T A M E U O A N C B E S W
P C K S E Y G L U M U D N I P E C L R E
W N O I Q Z X E V L K F H A C H E J N E
P C X R L U H S J C K C R A G O I A J V
W Z U A S T I N K B U G L D N A R D V I
W V H G P C Y T N B C Y L G A I E Z T L
R N A U N G Z D O S K W C J T M C A P X

WORD BANK

ant	aphid	blister beetle	boll weevil
chinch bug	cockroach	flea	gnat
grasshopper	housefly	Japanese beetle	lace bug
leafhopper	midge	mosquito	sawfly
stinkbug	termite	thrip	weevil

Hover Fly

Resembling a bee with its yellow and black banded markings, the hover fly is like a tiny helicopter hovering about flowers. The remarkable little insect can hang suspended in midair, fly forward, backward, and from side to side. The hover fly is a beneficial insect, pollinating flowers and living on nectar and honeydew.

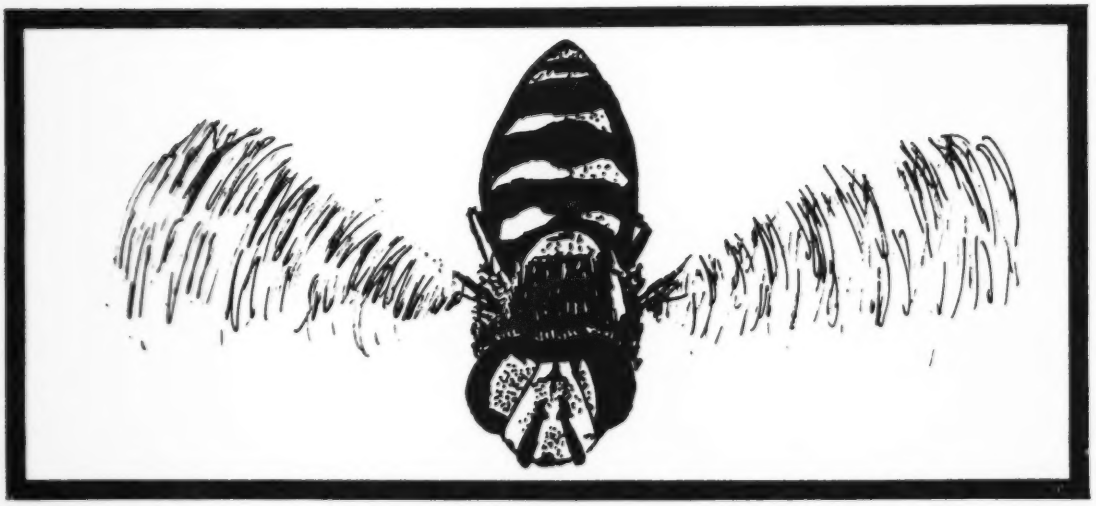
The hover fly is a two-winged insect belonging to the family Syrphidae. Over 4600 different species of the hover fly have been scientifically described. Some are vividly colored with iridescent blue or green. Others have bands of black and yellow or orange. Although some species of the hover fly are sometimes mistaken for hornets and other bees because of similar markings, most species are quite harmless. The hover fly is often observed flying about in groups, feeding upon flowers. It varies in appearance from the small, elongated variety to the larger, hairy species resembling bumblebees. The adult has an extra vein in the central section of the wing, making it easy to distinguish from bees and wasps.

Many species of the hover fly are known for mimicking bees and wasps. In addition to a similar appearance, many have developed behavior like that of specific bees and wasps. It is difficult for the untrained eye to differentiate the two.

The eyes of the hover fly are very alert and perceptive. They enable it to readjust its flight position quickly. Detecting movements quite rapidly, the hover fly is able to alter its hovering position as needed. The hover fly is known as one of the most skillful of the flying insects.

The hover fly buzzes as it flies, but its buzz differs from the sound of a bee. When the hover fly alights on a surface, the buzz often continues. The sound appears to be generated from the vibrations of the insect's thorax. Scientists have not determined the significance of the buzzing.

The larvae of the hover fly prey on aphids, mealybugs, and plant lice. This serves a beneficial purpose to man by controlling insects that are harmful to plants.

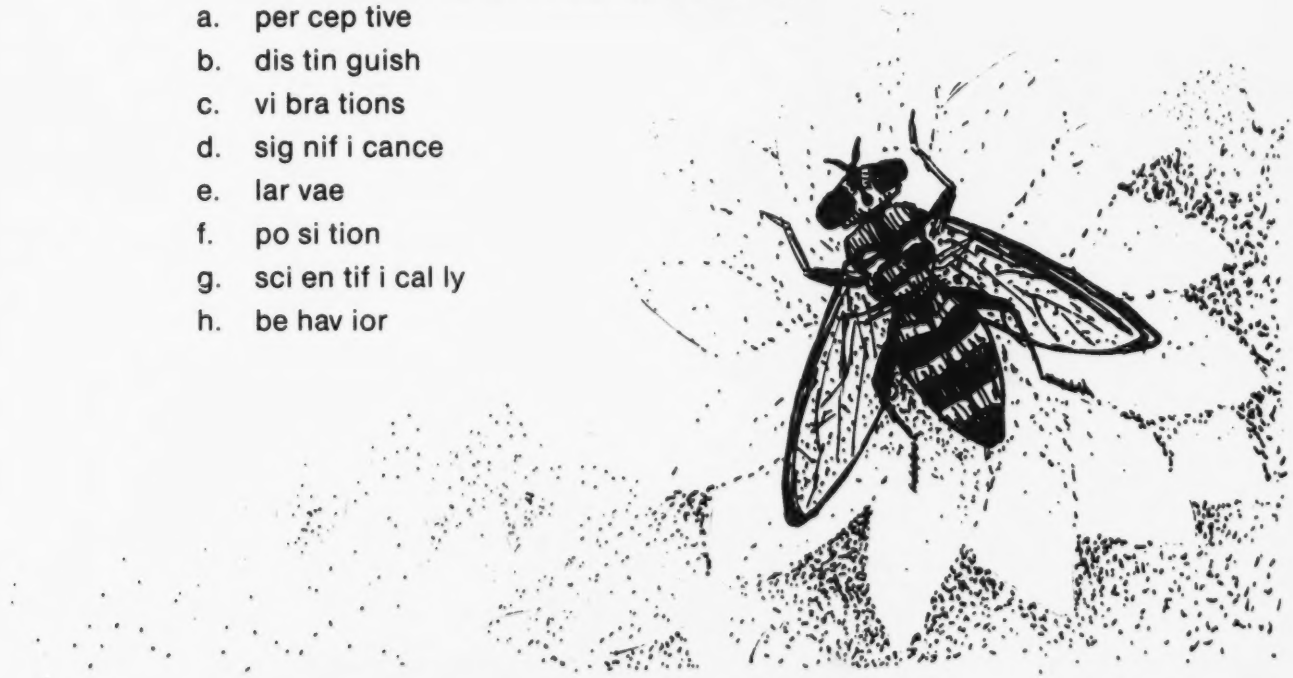


Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-4.

1. The selection is mainly about
   a. a black and yellow banded bee
   b. a fly that mimics bees
   c. an iridescent blue or green wasp
2. The hover fly is considered
   a. beneficial to man
   b. harmful to man
   c. of little value to man
3. A word in the selection that means "able to tell the difference" is
   a. skillful
   b. perceptive
   c. differentiate
4. A synonym for "produced" is
   a. generated
   b. determined
   c. suspended
5. When an accent mark is placed after a syllable, we know the syllable should be stressed when we pronounce the word. The words below have been divided into syllables. Place an accent mark after the syllable in each word that receives the most emphasis.
   a. per cep tive
   b. dis tin guish
   c. vi bra tions
   d. sig nif i cance
   e. lar vae
   f. po si tion
   g. sci en tif i cal ly
   h. be hav ior



Name _____

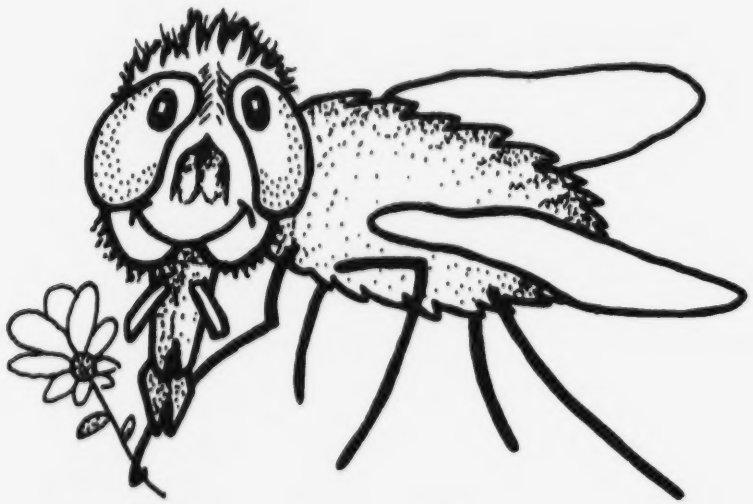
What'd You Call It

Directions: The hover fly is sometimes called by another name. Do you know the name? To find out, read each clue and write the word from the selection that is defined by the clue. The letters inside the circles spell the answer. Write the circled letters in the blanks below.

Clues:

1. observant _ _ _ _ _ _ (O) _ _ _
2. dangerous (O) _ _ _ _ _ _
3. fluttering in the air _ _ _ (O) _ _ _ _
4. importance _ _ _ _ _ (O) _ _ _ _ _ _ _
5. quick to react _ (O) _ _ _ _
6. lengthened _ _ (O) _ _ _ _ _ _
7. opposite of backward _ _ _ (O) _ _ _
8. helpful _ (O) _ _ _ _ _ _ _ _
9. produced _ _ _ _ (O) _ _ _ _
10. able to tell a difference _ _ (O) _ _ _ _ _ _ _ _ _ _
11. lands or descends upon _ (O) _ _ _ _ _
12. brightly _ _ _ _ _ _ (O)

Another name for the hover fly is _ _ _ _ _ _ _ _ _ _ _ _ _



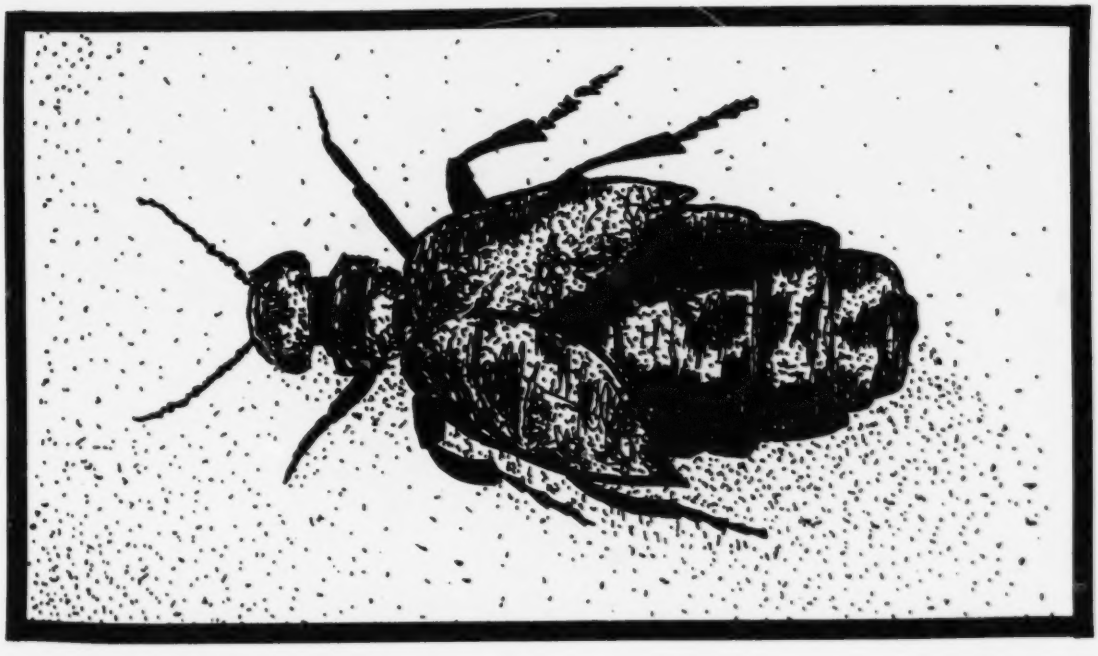
Oil Beetle

Nature has provided the oil beetle with an interesting defense system. The small beetle releases an oily substance when handled. Actually, the bad-smelling substance is the oil beetle's blood. The oil beetle releases the blood by compressing its abdomen and raising its blood pressure. The skin in the leg joints breaks, forcing out the foul-smelling blood and deterring its enemies. The process is called reflex bleeding. The blood quickly clots around the joints and the oil beetle goes on its way.

The oil beetle is a relative of the blister beetle. It is a dull-colored insect about one to one and a half inches long. A wingless insect, the oil beetle is unable to fly. Even though it has no wings, it does have short wing cases.

Life is not easy for the oil beetles. Many of the insects never survive to the adult stage. The female lays thousands of eggs on the ground which hatch into larvae. In order to survive, the larvae, resembling lice, must catch rides on the bodies of bees and find their way into the cell of a honeycomb. If the larvae hitch a ride with the wrong kind of insect, their existence may be in jeopardy. Many perish at this stage. After entering the cell of a honeycomb, the larvae feed on the supply of honey stored there. They spend the winter as headless maggots without legs. The larvae continue to feed and develop, shedding their skin several times and developing into pupas. When spring arrives, the oil beetles emerge from the bee's nest. The larvae have also been known to settle among a mass of locust eggs and develop into the adult insects in the same way.

The oil beetle can be destructive to plants. Since the insect is distasteful to birds and other predators, the oil beetle roams about flowers, feeding upon nectar and nibbling the foliage. It damages crops such as corn, beans, alfalfa, and tomatoes, causing farmers to consider it a pest.

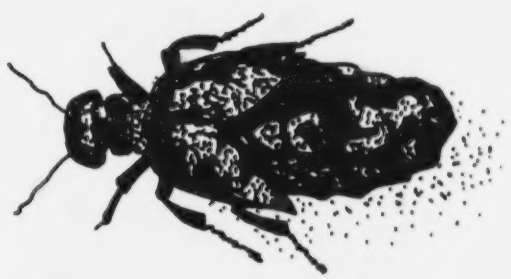


Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a relative of the blister beetle
   b. the larvae of the oil beetle
   c. an insect's defense system
2. The oil beetle is considered
   a. beneficial
   b. a pest
   c. neither harmful nor beneficial
3. The oil beetle's blood has
   a. an unpleasant odor
   b. a strange consistency
   c. a peculiar color
4. A word in the selection that means "danger" is
   a. perish
   b. destructive
   c. jeopardy
5. A synonym for "discouraging" is
   a. deterring
   b. compressing
   c. distastful
6. Write the entry word listed in your dictionary that follows each word below.
   a. defense _____
   b. reflex _____
   c. foliage _____
   d. relative _____
   e. substance _____

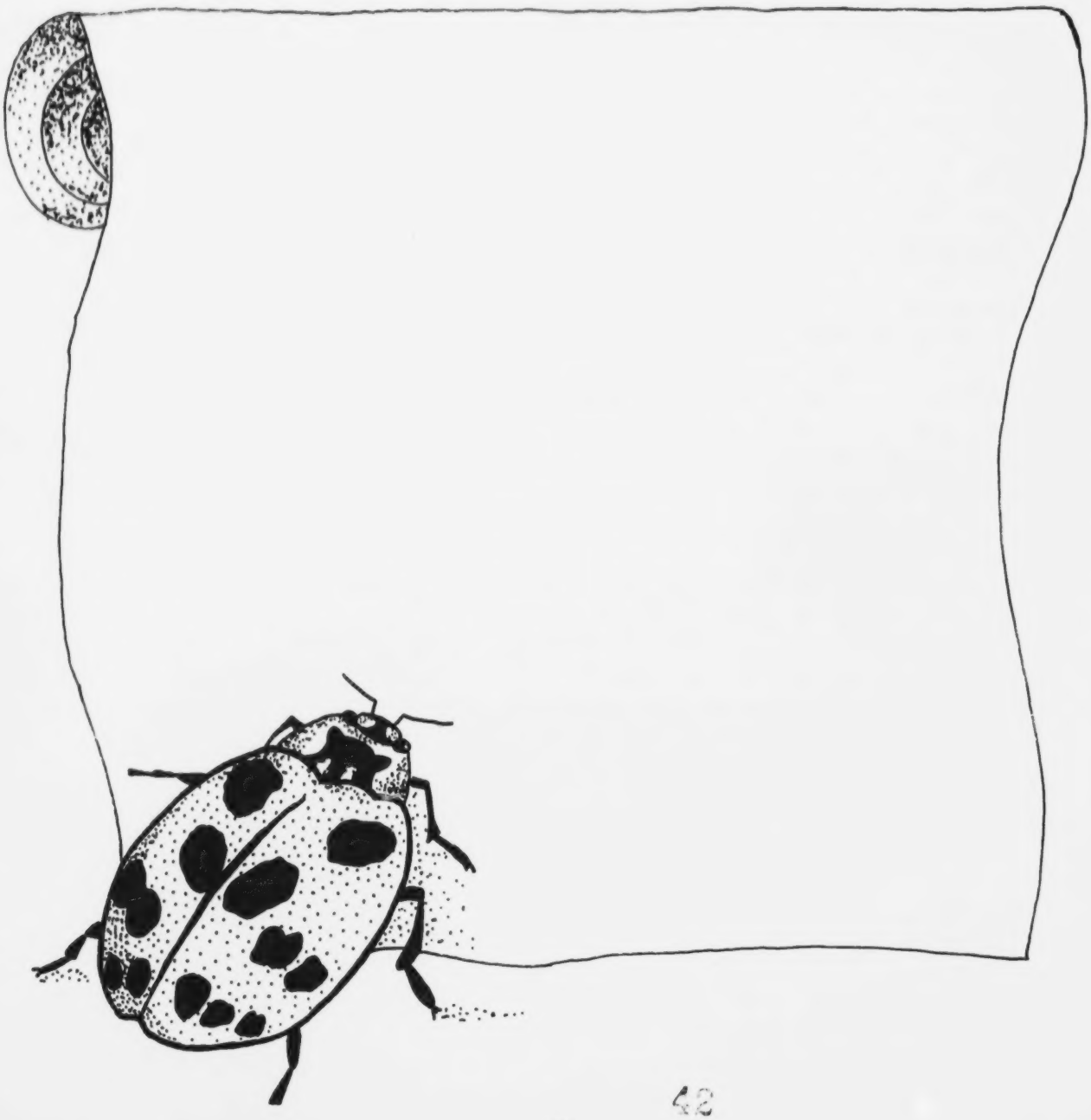


Name _____

Tribute to a Ladybug

Directions: Beetles come in a variety of shapes, colors, and sizes. In fact, scientists have identified about 250,000 different kinds of beetles. One of the most familiar is the ladybug or ladybird beetle, a beneficial insect that feeds on aphids and other insects that harm plants.

Write a verse to honor our friend, the ladybug.



42

Sphinx Moth

Possessing an extraordinary power of flight, the sphinx moth has an almost worldwide distribution. Many of the more than eight hundred species of the sphinx moth are migratory. The streamlined body and strong wings enable the insect to travel great distances. The sphinx moth, a member of the family Sphingidae, usually travels at twilight. Compared to other moths, the sphinx moth is larger, some with a wingspan reaching almost eight inches.

The sphinx moth plays an important role in pollination. Its long, coiled tongue is able to reach inside deep, tubular flowers where many insects cannot venture. Charles Darwin, the famous natural scientist, noted in his research in 1862 that a certain orchid found in Madagascar contained nectar so deeply hidden within the blossom that only an insect with a very long proboscis could possibly pollinate the flower. No species of the sphinx moth, or hawkmoth, was known to exist in the area, but Darwin felt that it must. In 1891 another naturalist, Alfred Russel Wallace, predicted that such a moth must exist since the plant was being cross-pollinated by something capable of penetrating depths of ten to thirty inches. A few years later such a sphinx moth was found and classified.

One remarkable sphinx moth is called the death's head hawkmoth. It is a fascinating creature found in parts of Europe and Africa. A large, harmless insect with distinctive coloring, the death's head hawkmoth has a spectacular feature. On the back of its thorax is a design resembling a human skull. Unlike most sphinx moths, the death's head hawkmoth has a short, thick proboscis that it uses to produce a squeaking sound when disturbed. The presence of the insect has led to the superstition that something will soon die.

Another sphinx moth, the eyes hawkmoth, has brown forewings covering its hind wings. The insect resembles dead leaves, but when disturbed, it spreads its forewings to reveal brightly colored eyespots on the hind wings. The eyespots startle its enemies.

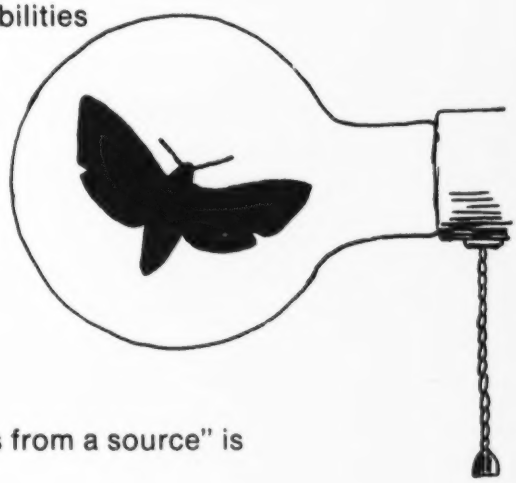
The caterpillar of the sphinx moth rests in a position similar to that of the famous Egyptian Sphinx. Deriving its name from the Sphinx, the sphinx moth caterpillar holds its head and front part of the body in the air and positions the thoracic legs close together.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a moth known for its powerful flying abilities
   b. a moth that seldom migrates
   c. a moth known for its short proboscis



2. The sphinx moth is useful because
   a. it destroys insect pests
   b. it pollinates deep blossoms
   c. it feeds on garden predators
3. The death's head hawkmoth has
   a. a human skull design on its thorax
   b. a bright eye on its thorax
   c. a pair of colorful striped wings
4. A word in the selection that means "traces from a source" is
   a. positions
   b. travels
   c. derives
5. A synonym for "entering" is
   a. reaching
   b. penetrating
   c. possessing
6. All of the words below contain a suffix. Write the root word for each.
   a. distribution _____
   b. migratory _____
   c. pollination _____
   d. classified _____
   e. covering _____
   f. tubular _____
   g. colored _____
   h. contained _____

44

Name _____

Mystery Moth

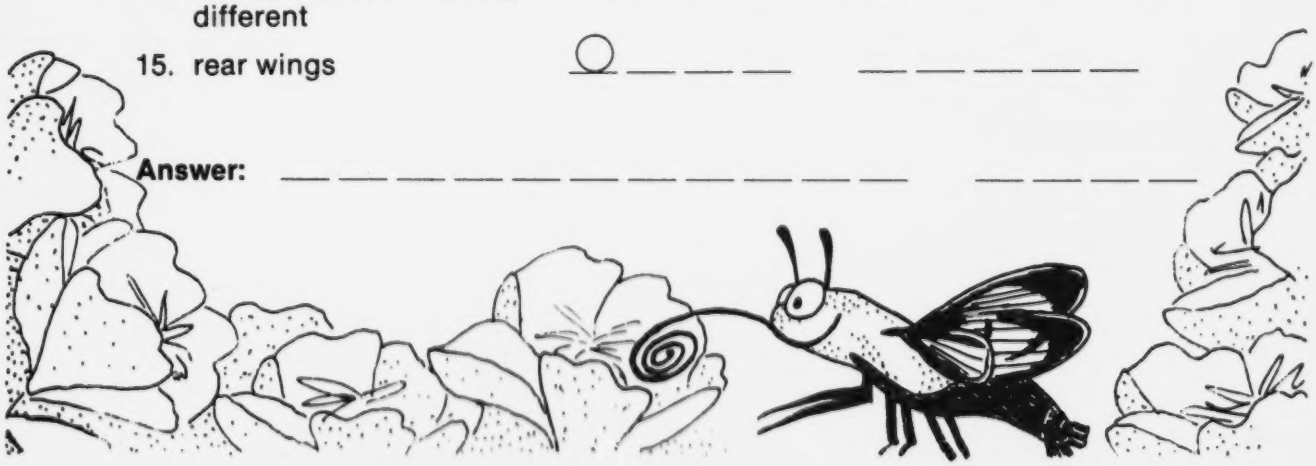
Directions: Sometimes an insect is known by several names. The sphinx moth, or hawkmoth, has been called by another name because of its behavior while collecting nectar. Is the name a mystery to you?

To discover the name, read the definition of each word as it was used in the selection, and write the word in the blank. The circled letters spell the name. Write the circled letters in the blanks below.

Definitions:

1. extending _ _ _ _ (O) _ _ _
2. origin _ _ (O) _ _ _
3. characterized by moving from place to place (O) _ _ _ _ _ _ _ _
4. not dangerous _ _ _ (O) _ _ _ _
5. natural geographic range _ (O) _ _ _ _ _ _ _ _ _ _
6. to go despite risk _ _ (O) _ _ _ _
7. entering _ _ _ _ _ _ _ _ _ _ (O)
8. having ability _ _ _ _ (O) _ _
9. to have reality _ _ (O) _ _
10. to frighten suddenly _ _ _ (O) _ _ _
11. a kind of flower _ _ _ _ _ (O)
12. a bloom _ _ _ _ _ _ (O)
13. function _ (O) _ _
14. clearly marked as being different _ _ _ (O) _ _ _ _ _ _ _
15. rear wings (O) _ _ _ _ _ _ _ _

Answer: _



Swallowtail Butterfly

Most species of the swallowtail butterfly have a special distinction shared by no other butterfly species. Each hind wing features a pointed tail similar to the pointed wings of the swallow. It should be noted, however, that some species do not possess the tail even though swallowtail is part of the common name.

The fundamental body structure of all swallowtails is like that of other butterflies. It has three main body parts and two large eyes. The antennae contain tiny knobs for detecting odors of flowers. The swallowtail has a coiled proboscis used for collecting nectar from flower blossoms. The wings are brightly colored, but they often blend well with their surroundings.

Metamorphosis in the life of the swallowtail consists of four stages: egg, larva, pupa, and adult. The egg stage lasts about a week. The larva or caterpillar that emerges from the egg is concerned only with eating. It must eat in order to develop to the next stage. It molts, or sheds its outer covering, four times as it grows larger. The swallowtail caterpillar then is a striking specimen with bright green skin marked with black, white, and yellow. It has an orange horn behind its head that it uses for defense. When attacked or threatened, the caterpillar releases a foul-smelling chemical with the horn. When the time is right, the caterpillar attaches itself to a twig or tree branch and begins to spin threads around its body. Then it sheds its skin once more, revealing the pupa beneath. A hard shell is formed around the pupa to protect it during its period of hibernation. A miracle occurs within as the pupa changes. When the transformation is complete, a beautiful swallowtail butterfly emerges ready to stretch its legs and dry its wings.

Very shortly the swallowtail butterfly is ready to try its wings. It flies about in the daytime but settles down for the night at dusk, folding its wings together. It lives for several weeks, feeding on flower nectar.

The attractive swallowtail is found in North America, Asia, and North Africa. It is a spectacular specimen enjoyed by many who are fortunate to catch a glimpse of it.

Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a butterfly with pointed hind wings
   b. a butterfly with coiled hind wings
   c. a butterfly with colorless hind wings
2. The life cycle of the swallowtail butterfly consists of
   a. two stages
   b. three stages
   c. four stages
3. The antennae of the swallowtail are used for
   a. smelling
   b. fighting
   c. drinking
4. A word in the selection that means "basic" is
   a. complete
   b. fundamental
   c. striking
5. A synonym for "difference" is
   a. metamorphosis
   b. transformation
   c. distinction
6. The following words were used in the selection. Number the words in alphabetical order.

   ___ chemical
   ___ consists
   ___ coiled
   ___ concerned
   ___ complete
   ___ caterpillar
   ___ collecting
   ___ covering
   ___ colored
   ___ common

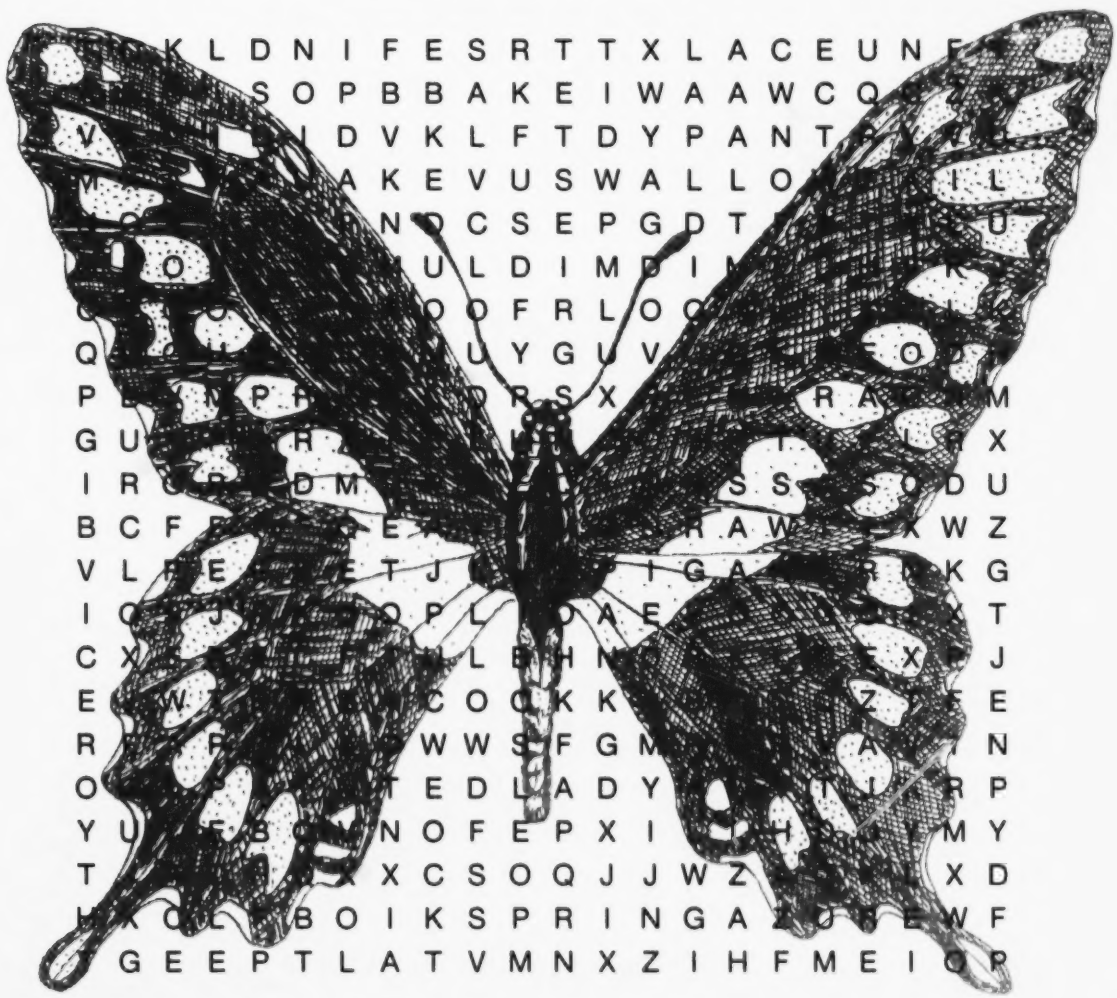
47

Name _____

Wings of Wonder

Directions: Butterflies and moths belong to the scientific order Lepidoptera. About 100,000 species of Lepidoptera have been discovered and named already, but many new ones are being discovered every year. One can only wonder how many flitting butterflies still await discovery.

The puzzle below contains the common names of twenty magnificent butterflies. You may look horizontally, vertically, and diagonally. Circle your findings.



WORD BANK

apollo	blue mountain	brimstone	clouded yellow
copper	drury	gatekeeper	hairstreak
monarch	mourning cloak	orange tip	painted lady
peacock	purple emperor	red admiral	silverstripe
spring azure	swallowtail	viceroy	wallace

Termite

The termite, a social insect, has often been called the "white ant," but the termite's nearest relative is actually the cockroach. The termite is a small, soft-bodied insect with short beadlike antennae. It is usually white or light-colored. Its mouth, feelers, wings, and body structure are similar to that of the cockroach. It is known for its destructive capabilities to homes and wood. Although considered a pest, the termite does serve a beneficial purpose by converting dead trees into useful substances for plants.

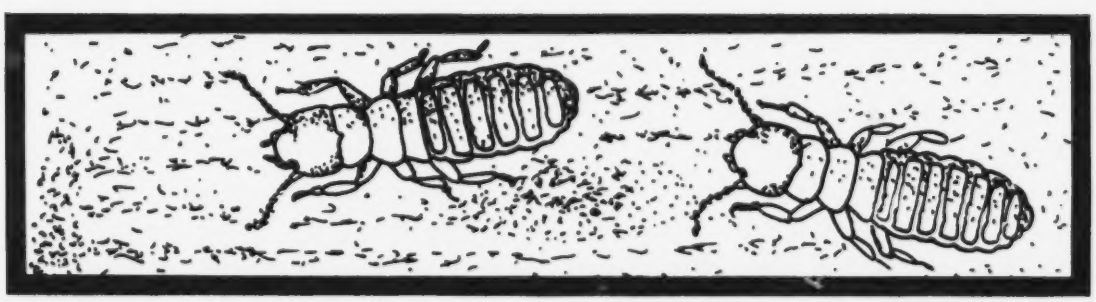
There are about two thousand known species of termites. All live in colonies with a high degree of socialization. A termite colony usually consists of a king, a queen, nymphs, workers, and soldiers. Termites undergo incomplete metamorphosis, developing from egg to nymph to adult. The termites within a colony are known for their specialized patterns of social life.

The majority of the termites in a colony are wingless workers and worker nymphs. They are equipped with broad mandibles that enable them to do their work. They construct tunnels, maintain the nest, and find food and water for the colony. The workers are blind, but it doesn't appear to hinder them. They use their antennae to feel, smell, and communicate.

The soldiers, also wingless and blind, have powerful jaws that are used as weapons of defense when the colony is threatened. The soldiers tap out warning sounds by snapping their jaws and by pounding their heads against something solid. Even though the soldiers are in charge of the colony's defense, it is interesting to note that they are unable to care for themselves. They depend upon the workers of the colony to provide them with food.

Termites swarm when it is time to create a new colony. Leaving the darkness of their home, thousands of termites fly upward in a thick swarm of fluttery wings. The swarming does not last long. They settle to the ground shortly thereafter and shed their wings by arching their bodies against the ground and breaking the wings off.

In the wingless state the males and females pair off. Their first concern is the preparation of a new home. After the home is created, the termite couple mates for life. They remain faithful to each other and may live for as long as twenty or more years, producing many offspring as king and queen of the colony.

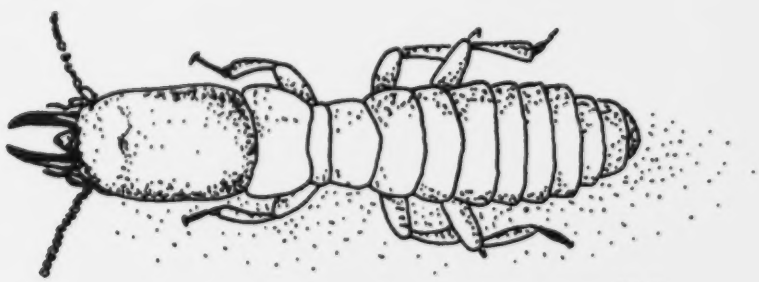


Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a social insect with specialized functions
   b. a social insect with a defenseless colony
   c. a social insect with a mysterious way of life
2. The termite is similar to
   a. the ant
   b. the cockroach
   c. the flea
3. The majority of the termites in a colony are
   a. soldiers
   b. kings and queens
   c. workers and nymphs
4. Metamorphosis in termites consists of
   a. egg, nymph, pupa, adult
   b. egg, nymph, adult
   c. egg, larvae, pupa, adult
5. A word in the selection that means "changing from one form to another" is
   a. converting
   b. producing
   c. arching
6. Look up the following words in a dictionary. Write the guide words for each word.
   a. swarm _____
   b. defense _____
   c. metamorphosis _____
   d. cockroach _____
   e. majority _____



50

Name _____

Beyond Repair?

Directions: Help! A very hungry termite ate all the consonants in the list of insects below. You can restore the names by inserting the correct consonants in the spaces.

1. ___ A ___ E ___ I ___ ___
2. A ___ ___
3. ___ I ___ E ___ ___ Y
4. ___ O ___ E Y ___ E E
5. ___ ___ A ___ O ___ ___ ___ Y
6. ___ U ___ ___ E ___ ___ ___ Y
7. ___ U ___ ___ ___ E ___ E E
8. ___ O ___ ___ ___ O A ___ ___
9. ___ E E ___ I ___
10. ___ ___ I ___ ___ E ___
11. ___ O ___ ___
12. ___ ___ E A
13. ___ E E ___ ___ E
14. ___ O U ___ E ___ ___ Y
15. ___ ___ A ___ ___ ___ O ___ ___ E ___

Trash-Carrier

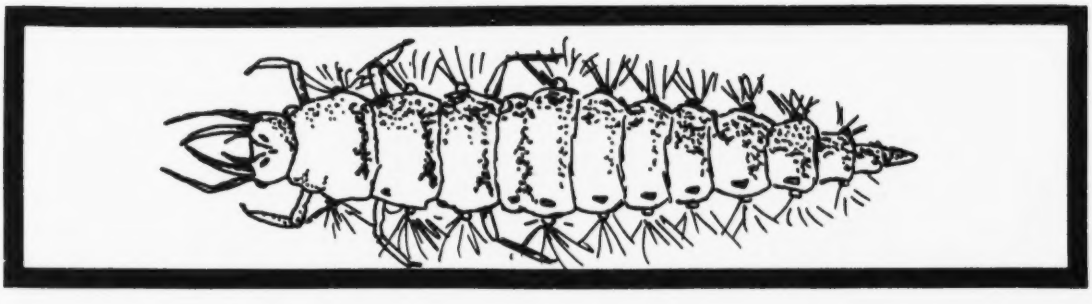
Have you ever seen an insect that looks like a small walking pile of garbage? If so, you have probably seen the trash-carrier, the larva form of the green lacewing fly (Chrysopidae family). The trash-carrier is the nickname bestowed upon the insect because of its habit of carrying a heap of trash on its back. The trash includes the remains of meals, moss, bark, and other assorted materials. The garbage is held in place by bristles on the larva's body. Crawling about on tree branches, the trash-carrier is camouflaged beneath the rubbish.

The trash-carrier feeds on aphids, mealybugs, and other small insects, but it doesn't eat the bodies of the prey. After draining an insect of its body fluids, it piles the body remains on top of other rubbish, disguising itself so birds and other enemies will not notice.

Also known as an aphis lion, the trash-carrier is an active hunter of prey. Walking around with its unusual disguise, the green lacewing larva is able to get close enough to its prey to attack. Sneaking behind an unsuspecting insect, it quickly reaches out with sicklelike jaws and attacks the prey.

After developing in the larva stage, the creature continues its metamorphosis by spinning a silken cocoon. After a couple of weeks a miracle occurs. An adult green lacewing fly emerges from the cocoon. The adult has four delicately textured wings. The wings have a gauzy appearance with a span of from eight to sixty mm. Also associated with the green lacewing fly is an unpleasant odor that tends to afford it protection from enemies.

The adult lacewing fly lays eggs on the stems of leaves. Usually only one egg is found per stem. Some scientists believe the eggs are laid apart from each other so the emerging larvae will not eat its own species. The eggs hatch into larvae with healthy appetites. Each larva seeks aphids, thrips, and other small insects for food. After ingesting the fluids of its prey, the larva tosses the remains on its back and becomes another trash-carrier of the insect world.



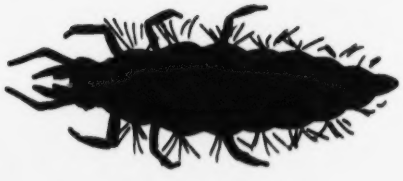
Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. the diet of the trash-carrier
   b. the larva of the green lacewing fly
   c. the defense methods of the green lacewing fly
2. The trash-carrier is
   a. a herbivore
   b. a predator
   c. a parasite
3. The trash-carrier develops into
   a. an aphis lion
   b. a green lacewing fly
   c. an aphid
4. A word in the selection that means "to provide" is
   a. afford
   b. assorted
   c. disguise
5. A synonym for "connected" is
   a. bestowed
   b. associated
   c. textured
6. Each word below has been divided into syllables two different ways. Underline the correct syllabication for each word.

a.	disguising	dis guis ing	dis gu i sing
b.	unsuspecting	un su spec ting	un sus pect ing
c.	silken	silk en	sil ken
d.	appearance	ap pear ance	ap pea rance
e.	appetites	app e tites	ap pe tites
f.	camouflaged	cam ou flaged	cam o u flag ed
g.	materials	ma te ri als	mat e ri als
h.	attacks	a ttacks	at tacks
i.	miracle	mi rac le	mir a cle
j.	unpleasant	un pleas ant	un ple as ant

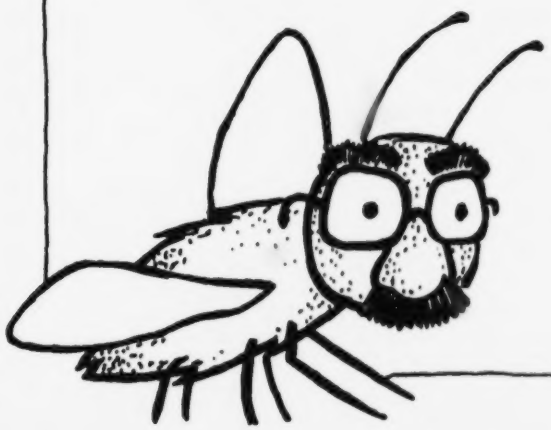


Name _____

Masters of Camouflage

Directions: By piling the remains of meals upon its back, the trash-carrier attempts to blend into its background. Many other insects use different tools of camouflage such as color, shape, and mimicry to hide from their enemies. Choose one of the insects below and find out how it uses camouflage. Write a paragraph explaining how camouflage helps protect the insect.

treehopper
hover fly
geometrid moth
viceroy butterfly
kallima butterfly
peppered moth
owlet moth
walking leaf
bush katydid
walkingstick
eyed silk moth
looper caterpillar



Tiger Beetle

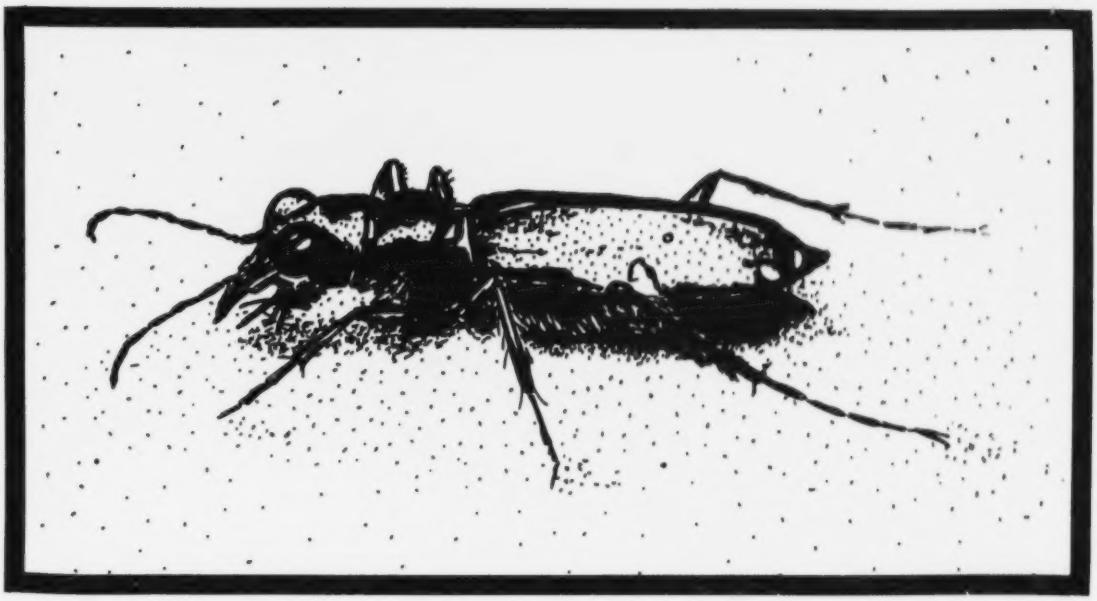
One of the most ferocious insect predators is the tiger beetle. Its colors include beautiful shades of blue, green, purple, and bronze, and it often has stripes on its wings. The insect is only about an inch long. Its strong legs enable it to run fast as it pursues insects and escapes enemies. The stalking insect pursues its prey and pounces upon it much as a tiger would. When it overtakes an insect, it grasps the prey with powerful jaws. Its sicklelike mandibles are a threat to other insects. It has even been known to bite a human!

Even in the larva stage, the tiger beetle has a ferocious reputation. Hiding in a hole with its head barely visible, the larva waits until an insect approaches. Then it attacks with its sharp jaws. The struggling victim is rarely successful in pulling the larva from its position. Hooks on the end of the larva anchor it to the sides of the hole, thus giving it a strong base from which to attack. The larva drags its prey into its hole where it proceeds to devour it.

When the time comes to change into an adult tiger beetle, the larva closes the entrance to the burrow and digs a chamber beneath. While in the chamber, a marvelous transformation occurs. The body changes from an unattractive larva to a glistening beetle. The adult tiger beetle emerges from the underground chamber ready to test its legs and wings.

In the summer the tiger beetle mates. After mating, the female tiger beetle prepares a hole in the ground and lays the eggs there. The eggs that survive the winter hatch into larva and later develop into adult tiger beetles.

There are 114 species of the tiger beetle. Many of them are found near ponds, lakes, and other bodies of water. The insects are quite agile, both on land and in the air. Their keen eyesight enables them to escape danger and pursue prey. Their hunting habits cause them to live up to their name.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a friendly insect
   b. a ferocious insect
   c. a timid insect
2. The tiger beetle
   a. stalks its prey
   b. hides from insects
   c. hunts only at night
3. The tiger beetle larva is
   a. invisible
   b. defenseless
   c. predatory
4. A word in the selection that means "a change" is
   a. reputation
   b. transformation
   c. position
5. A synonym for "mandibles" is
   a. jaws
   b. hooks
   c. wings
6. Divide the following words into syllables. Then underline the syllable that receives the primary stress in each word.
   a. ferocious
   b. pursues
   c. escape
   d. visible
   e. stalking
   f. enemies
   g. beautiful
   h. glistening

56

Name _____

Beetle Boaster

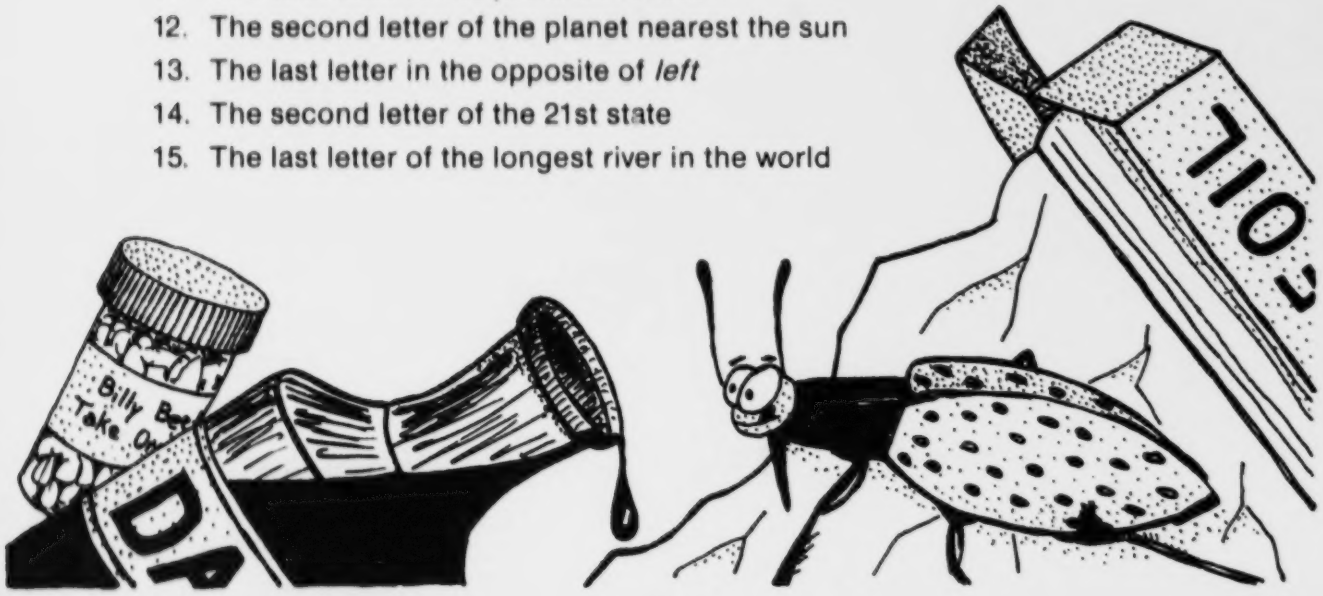
Directions: Beetles comprise the largest group of insects. Within the beetle group is an insect with a most remarkable diet. If it could talk, it could boast of eating a variety of substances including spices, medicines, tobacco, tinfoil, and some poisons!

To find out the name of the beetle, read each clue and write the correct letter in the blank above the number of each clue. The letters spell the answer.

___	___	___	___	___	___	___	___	___		___	___	___	___	___	___
1	2	3	4	5	6	7	8	9		10	11	12	13	14	15

Clues:

1. The second letter of the Gem State
2. The middle initial of the 38th U.S. President
3. The second letter of the largest known planet
4. The first letter of the state east of Alabama
5. The first letter of the first artificial satellite
6. The last letter in the past tense of *go*
7. The last letter of the capital of California
8. The first letter of the smallest state
9. The second letter of the second month of the year
10. The first letter of the last name of the 43rd U.S. Vice-President
11. The last letter of the plural of *mouse*
12. The second letter of the planet nearest the sun
13. The last letter in the opposite of *left*
14. The second letter of the 21st state
15. The last letter of the longest river in the world



Walkingstick

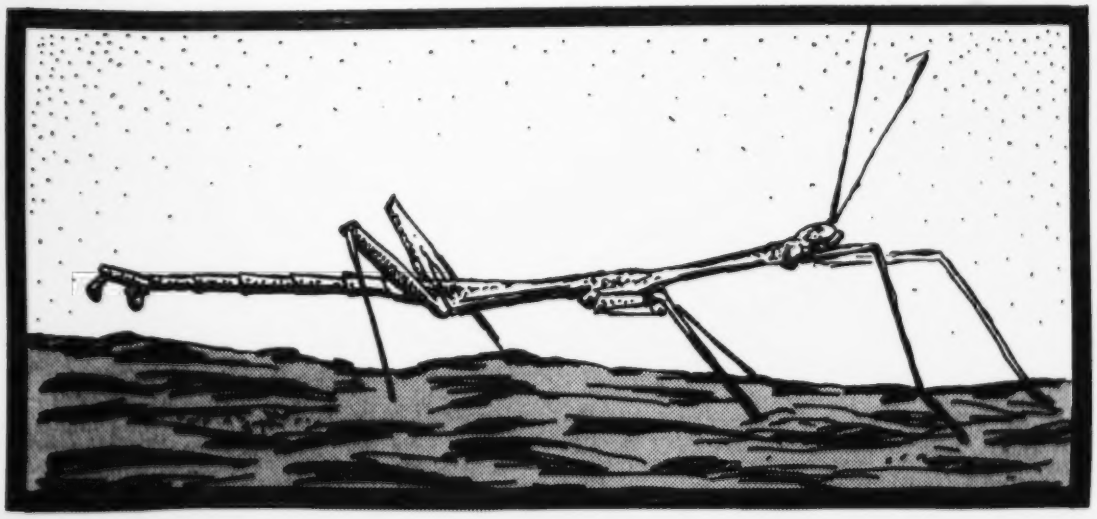
The walkingstick, a clever insect of disguise, is able to hide out in the open by resting on twigs of trees. Because it looks so much like a twig, the insect is able to hide from its enemies. There are several kinds of walkingsticks in the United States. The common walkingstick has long legs and a twiglike body that varies from two to four inches in length and an eighth of an inch in width. The walkingstick may be brown, gray, or green with body rings much like growth rings on a twig. Its eyes are tiny, and it has long antennae. Many species do not have wings,but others do.

A nocturnal insect, the walkingstick moves about feeding on leaves of trees and bushes. During the daytime it rests with its forelegs extended out in front of its head. It is slow in its movements and is content to remain in one position for a long time. During the day when it is in a motionless state, the legs of the walkingstick can be moved into a different position, and they will stay there.

The female walkingstick is not a very caring mother. She lays about one hundred eggs, but she does not attempt to protect them. The eggs are dropped to the ground in the late summer where they are at risk of perishing. Resembling tiny seeds, the eggs may hatch the following spring, or they may require a full year before developing sufficiently for hatching. Others never hatch.

Although the walkingstick relies mainly upon its mimicry of the twig on which it rests for protection, there is another defense which some species of the walkingstick have. Some are able to eject a bad smelling fluid from a gland beneath the thorax. The odor of the secretion wards off potential enemies.

A herbivorous insect, the walkingstick can be quite destructive to the foliage of trees. Sometimes the insect presents a serious threat to forests if its numbers increase to the point where the foliage is being noticeably destroyed. Usually natural enemies such as birds, lizards, spiders, and parasites keep the walkingstick population under control.



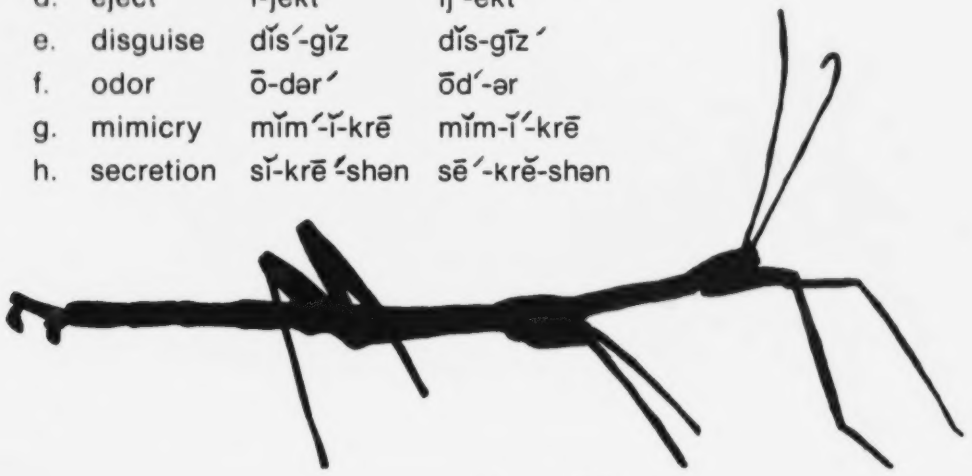
Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. an insect resembling a twig
   b. an insect resembling a seed
   c. an insect resembling a walking cane
2. The walkingstick moves about
   a. at night
   b. in the day
   c. at dawn
3. The walkingstick is
   a. a carnivore
   b. a herbivore
   c. an omnivore
4. A word in the selection that means "the act of imitating closely" is
   a. defense
   b. disguise
   c. content
5. A synomyn for "possible" is
   a. noticeably
   b. potential
   c. content
6. Underline the correct phonetic pronunciation of each word.

a.	nocturnal	näk-tərn´-l	näk´-tər-năl
b.	perishing	per´-ĭsh-ĭng	păr-ĭsh´-ĭng
c.	hatch	hă´-tch	hăch´
d.	eject	ĭ-jĕkt´	ĭj´-ĕkt
e.	disguise	dĭs´-gīz	dĭs-gīz´
f.	odor	ō-dər´	ōd´-ər
g.	mimicry	mĭm´-ĭ-krē	mĭm-ĭ´-krē
h.	secretion	sĭ-krē´-shən	sē´-krĕ-shən



Name _____

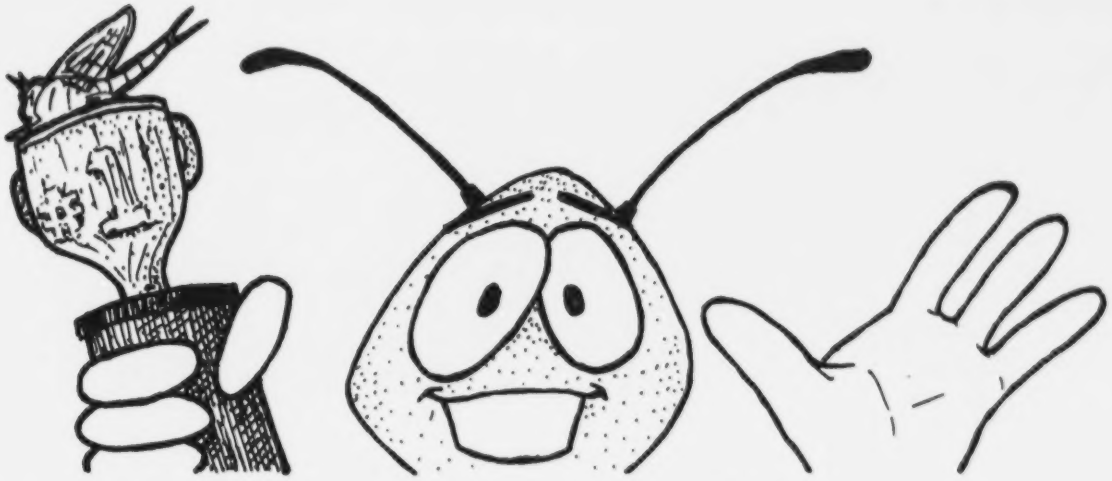
Who's Who in the Insect World

Directions: The walkingstick claims the distinction of being the insect most likely to imitate a twig. Other distinctions in the insect world are not as clear. Your nominations are needed in the categories below to complete the Who's Who list of our six-legged creatures. Fill in the blanks with your nominations.

1. The prettiest insect _____
2. The boldest insect _____
3. The ugliest insect _____
4. The most unusual insect _____
5. The hardest insect to catch _____
6. The greatest pest _____
7. The most beneficial insect _____
8. The most popular insect _____
9. The friendliest insect _____
10. The noisiest insect _____

Think about your favorite insect. Then list five clues about the insect. List the clues in order from the most general to the most specific. See how many clues must be read before your classmates can identify your favorite insect.

1. _____
2. _____
3. _____
4. _____
5. _____



Whirligig

The whirligig beetle is quite at home in the water. The tiny insect is a show-off at times as it swims, dives, and skitters along the surface of water. The whirligig is usually found with a group of fellow whirligigs darting about creating spiral patterns on the water's surface. Although it only swims in circular paths on the water, it moves in straight lines beneath the surface. It is such an agile insect that it is difficult to catch without a net. The whirligig carries air in its body, making it bob to the top of the water when not swimming or holding onto something as an anchor.

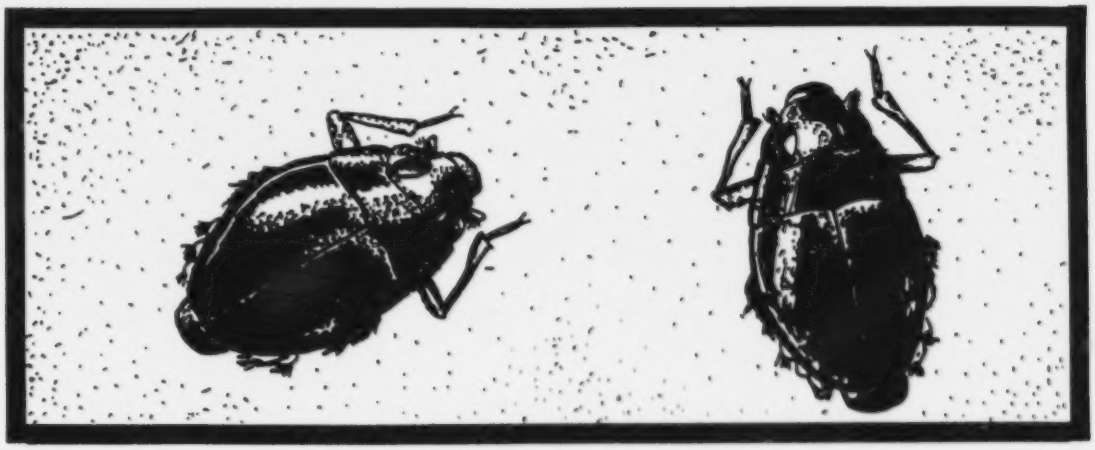
The whirligig has three methods of defense. One is to quickly escape by diving beneath the water. Another is to spread its wings and flee into the air. The third means of protection is the presence of an apple seed odor that exudes from the insect. The aroma seems to be displeasing to some predators who quickly give up the chase.

The body of the whirligig has a shiny appearance. The insect keeps itself lubricated with secretions from glands, thus enabling the body to remain dry. Shaped like a flattened oval, the whirligig is a bluish-black or dark bronze color. It is about a half an inch long. The front legs are slender, but the hind legs are flattened and paddle-shaped for ease in swimming.

The eyes of the whirligig are impressive. One pair of compound eyes can sight objects above the water level while the other pair looks below. This feature allows the insect to see in the bright light as well as in the darker depths below.

The whirligig has a sonar signal system that sends out high-pitched sounds that bounce off objects. The sounds echo back to the insect and help it avoid steering into obstacles.

The eggs of the whirligig are attached to plants beneath the water. The larvae, which later develop, breathe through rows of gills along the body sides. The slender, colorless larvae crawl and swim along the bottom. The next developmental stage, the pupa, occurs in a cocoon of mud and other material on the bank or on water plants above the water's surface. Finally, the pupa develops into the gyrating little insect that frolics about on the surface of ponds and pools of water.



Name _____

Skills Check

Directions: Circle the letters of the correct responses in items 1-5.

1. The selection is mainly about
   a. a jumping beetle
   b. a swimming beetle
   c. a defenseless beetle
2. The whirligig has unusual
   a. eyes
   b. wings
   c. antennae
3. The whirligig usually travels
   a. in triangular paths on the water
   b. in straight lines on the water
   c. in circular paths on the water
4. A word in the selection that means "moving in a spiral pattern" is
   a. steering
   b. gyrating
   c. swimming
5. A word that means "to move up and down in short, quick motions" is
   a. bob
   b. dive
   c. skitter
6. Circle the accented syllable in each word below.

a.	pupa	f.	skitters
b.	occurs	g.	insect
c.	protection	h.	sonar
d.	cocoon	i.	impressive
e.	anchor	j.	displeasing

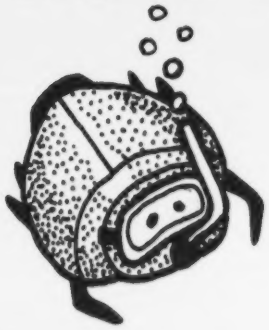
62

Name _____

What's My Name?

Directions: The whirligig has been called the submarine chaser and lucky bug. To discover another name for the gyrating water creature, cross out each box below that contains a word with a prefix. The remaining letters spell a nickname of the whirligig. Write the remaining letters in the blanks.

immobile C	colorless W	dislocate H	frolics R
spiral I	material T	renumber A	biannual N
obstacle E	unofficial L	creature S	community M
preheat K	brilliant Y	majority N	suddenly A
misdirect O	direction M	inadequate D	scientific E



Answer: _ _ _ _ _ _ - _ _ _ - _ _ _ _

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Answer Key

Page 2: 1. b 2. c 3. a 4. a 5. c 6. a. **sen**/so/ry b. ex/**is**/tence c. **clas**/si/fied d. en/to/**mol**/o/gists e. im/ma/**ture**

Page 3: 1. head 2. thorax 3. abdomen 4. antennae 5. wings 6. legs

Page 5: 1. b 2. c 3. b 4. a 5. a. method b. sufficient c. ingredient d. fragile e. crude f. substance g. sticky h. vapor i. cultivate

Page 6:

G	I	U	U	K	V	K	E	F	Z	G	Y	H	Q	Z	F	P	K	U	X	X	B	M	T
H	E	W	Y	S	N	Q	F	S	S	H	I	O	X	K	A	K	W	D	R	F	X	L	V
X	T	I	X	Y	P	W	J	N	K	U	O	N	U	Y	T	F	O	G	Y	Y	Q	T	W
O	S	E	Q	U	E	E	N	T	E	R	M	I	T	E	L	U	M	R	X	Y	B	V	P
X	N	Y	L	J	I	L	C	E	Y	T	X	P	V	T	O	O	I	S	L	X	U	E	Y
B	U	T	T	E	R	F	L	Y	S	R	W	N	O	O	K	P	C	F	K	C	T	L	U
E	W	X	X	T	K	R	L	O	F	D	M	I	G	T	G	A	N	O	W	D	F	V	R
F	A	S	T	X	S	W	T	U	W	Y	L	I	N	U	A	O	T	G	P	R	Z	E	P
A	R	R	F	L	E	A	O	A	L	J	E	L	B	G	M	T	G	Y	E	A	V	T	Y
A	O	X	W	S	R	G	B	F	P	P	A	E	U	U	E	S	O	T	D	E	L	A	I
D	I	P	Y	I	Z	C	E	B	A	C	N	C	E	N	Y	D	T	B	K	I	J	N	Q
R	L	J	T	P	G	N	K	R	I	U	H	N	K	O	M	U	B	L	E	A	D	T	S
A	B	V	X	V	O	D	Q	Y	J	O	H	V	F	E	B	O	K	E	K	E	O	U	F
G	E	F	O	T	H	W	A	S	P	C	Y	D	T	A	T	O	S	T	E	C	T	R	P
O	E	J	S	M	O	Y	T	X	I	L	U	W	R	U	B	U	T	Q	E	T	W	L	X
N	T	C	U	T	R	T	W	D	F	Z	T	B	W	B	M	S	X	G	U	E	L	Y	E
F	L	R	Y	S	N	F	S	R	G	V	E	F	G	Q	O	B	M	C	H	I	W	E	Y
L	E	I	U	M	E	I	E	U	Q	Z	B	C	E	I	Y	J	L	C	N	P	T	R	L
Y	M	C	M	A	T	B	B	R	L	U	I	M	F	E	J	A	P	E	Q	F	N	O	G
I	Y	K	C	S	B	Y	G	N	A	T	O	E	A	S	H	J	E	S	B	P	R	A	V
R	H	E	E	O	D	A	J	E	R	B	W	U	O	D	E	R	C	Q	Z	U	E	P	L
Q	E	T	R	A	K	O	B	W	V	P	U	F	I	P	H	Z	Q	U	B	S	G	H	A
Y	O	G	L	S	E	O	A	U	R	A	N	I	A	M	O	T	H	B	S	S	N	I	T
W	E	U	N	U	G	C	A	V	V	Z	U	S	B	J	D	M	T	D	D	A	D	D	P

Page 8: 1. b 2. b 3. a 4. c 5. a. power b. cover c. cause d. gain e. direct f. life g. suspect h. particular i. capture j. include
6. a. meta**mor**phosis b. **del**icate c. lo**ca**tions d. di**am**eter e. es**cap**ing f. pur**sue** g. pre**da**cious h. **cir**cular

Page 11: 1. b 2. b 3. a 4. b 5. a 6. column 1: 2, 1, 4, 3 column 2: 1, 3, 2, 4

Page 14: 1. a 2. c 3. b 4. a 5. c 6. a. nec/tar b. green/ery or green/er/y c. par/a/lyz/es d. spe/cial/iz/ing e. tem/per/a/tures f. rep/u/ta/tion g. ep/i/sode

Page 15: 1. horsefly 2. ladybug 3. housefly 4. bumblebee 5. dragonfly 6. shield bug 7. butterfly 8. honeybee 9. cockroach 10. firefly 11. froghopper 12. stinkbug 13. bee fly 14. mayfly 15. grasshopper

Page 17: 1. c 2. a 3. c 4. b 5. b 6. a. able b. fresh c. hatch d. large e. vary f. final g. cultivate h. threat

Page 18: 1. firefly 2. dragonfly 3. honeybee 4. grasshopper 5. cricket 6. termite 7. cicada 8. moth 9. silverfish 10. housefly 11. cockroach 12. mantid

Page 20: 1. c 2. a 3. b 4. a 5. b 6. Place an X in the blanks before *spectacular, species, streams, speed,* and *surface.*

Page 21: 1. cicida 2. hornet 3. mayfly 4. dragonfly 5. whirligig 6. butterfly 7. mosquito 8. stinkbug 9. horsefly 10. termite 11. cricket 12. katydid

Page 23: 1. c 2. a 3. a 4. b 5. b 6. a. talented b. vegetarian c. degree d. steady e. creak f. combat g. angle h. arena i. antennae

Page 24: 1. REMOVE green, LEAVE beetle 2. REMOVE purple, LEAVE katydid 3. REMOVE blue, LEAVE mosquito 4. REMOVE yellow, LEAVE hornet 5. REMOVE orange, LEAVE aphid 6. REMOVE red, LEAVE flea 7. REMOVE pink, LEAVE moth 8. REMOVE brown, LEAVE wasp 9. REMOVE tan, LEAVE cricket 10. REMOVE gray, LEAVE ladybug

Page 26: 1. a 2. a 3. b 4. b. 5. a. frog hop per b. re sem ble c. spe cial d. froth y e. par a sites f. en zyme g. mech a nism h. spit tle

Page 27: 1. t 2. t 3. f 4. t 5. f 6. t 7. t 8. f 9. t 10. t 11. f 12. t 13. f 14. f 15. f 16. t 17. f 18. t 19. t 20. f 21. t 22. f 23. t 24. t
Message: You may discover a new insect!

Page 29: 1. a 2. b 3. c 4. a 5. b 6. a. 2 b. 4 c. 5 d. 2 e. 4 f. 5 g. 3 h. 3

Page 30:

P	S	K	U	A	Z	P	G	L	R	M	H	W	B	S	X	T	R	V	A
D	O	G	N	T	W	D	G	Q	D	H	Q	L	P	V	N	B	I	X	X
X	Y	Z	V	H	U	R	J	L	X	F	R	S	J	A	K	X	U	N	W
U	U	L	T	R	C	G	A	K	A	U	H	N	F	B	T	X	D	T	K
C	O	X	J	I	P	K	P	G	Z	L	Y	O	G	E	T	D	V	P	T
O	A	W	T	P	P	V	A	F	R	E	F	I	U	T	I	S	R	T	E
C	S	A	W	F	L	Y	N	L	U	A	A	D	W	S	J	N	N	Z	L
K	P	U	K	V	C	R	E	E	J	F	S	Z	W	V	E	D	D	V	M
R	W	V	Q	T	I	L	S	A	G	H	F	S	Z	E	S	F	R	E	G
O	C	L	H	E	E	F	E	O	M	O	W	Y	H	L	E	W	L	U	B
A	M	Q	Q	R	X	I	B	N	G	P	Q	A	L	O	V	V	B	Y	O
C	J	G	M	M	I	S	E	T	M	P	P	U	M	K	P	H	I	G	L
H	M	B	L	I	S	T	E	R	B	E	E	T	L	E	C	P	U	L	L
D	J	O	I	T	D	X	T	A	M	R	U	O	A	N	C	B	E	S	W
P	C	K	S	E	Y	G	L	U	M	U	D	N	I	P	E	C	L	R	E
W	N	O	I	Q	Z	X	E	V	L	K	F	H	A	C	H	E	J	N	E
P	C	X	R	L	U	H	S	J	C	K	C	R	A	G	O	I	A	J	V
W	Z	U	A	S	T	I	N	K	B	U	G	L	D	N	A	R	D	V	I
W	V	H	G	P	C	Y	T	N	B	C	Y	L	G	A	I	E	Z	T	L
R	N	A	U	N	G	Z	D	O	S	K	W	C	J	T	M	C	A	P	X

Page 32: 1. b 2. a 3. c 4. a 5. a. per cep′tive b. dis tin′guish c. vi bra′tions d. sig nif′i cance e. lar′vae f. po si′tion g. sci en tif′i cal ly h. be hav′ior

Page 33: 1. perceptive 2. harmful 3. hovering 4. significance 5. alert 6. elongated 7. forward 8. beneficial 9. generated 10. differentiate 11. alights 12. vividly
Answer: the flower fly

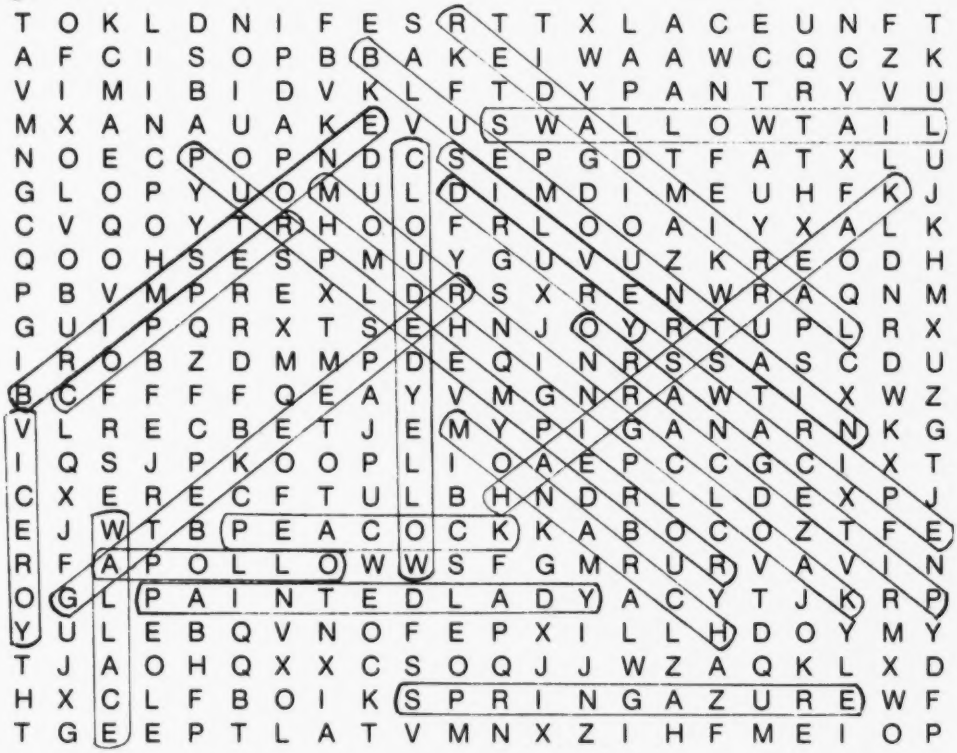
Page 35: 1. a 2. b 3. a 4. c 5. a 6. Answers may vary.

Page 38: 1. a 2. b 3. a 4. c 5. b 6. a. distribute b. migrate c. pollinate d. classify e. cover f. tube g. color h. contain

Page 39: 1. reaching 2. source 3. migratory 4. harmless 5. distribution 6. venture 7. penetrating 8. capable 9. exist 10. startle 11. orchid 12. blossom 13. role 14. distinctive 15. hind wings
Answer: hummingbird moth

Page 41: 1. a 2. c 3. a 4. b 5. c 6. 2, 9, 3, 8, 7, 1, 4, 10, 5, 6

Page 42:


T O K L D N I F E S R T T X L A C E U N F T
A F C I S O P B B A K E I W A A W C Q C Z K
V I M I B I D V K L F T D Y P A N T R Y V U
M X A N A U A K E V U S W A L L O W T A I L
N O E C P O P N D C S E P G D T F A T X L U
G L O P Y U O M U L D I M D I M E U H F K J
C V Q O Y T R H O O F R L O O A I Y X A L K
Q O O H S E S P M U Y G U V U Z K R E O D H
P B V M P R E X L D R S X R E N W R A Q N M
G U I P Q R X T S E H N J O Y R T U P L R X
I R O B Z D M M P D E Q I N R S S A S C D U
B C F F F F Q E A Y V M G N R A W T I X W Z
V L R E C B E T J E M Y P I G A N A R N K G
I Q S J P K O O P L I O A E P C C G C I X T
C X E R E C F T U L B H N D R L L D E X P J
E J W T B P E A C O C K K A B O C O Z T F E
R F A P O L L O W W S F G M R U R V A V I N
O G L P A I N T E D L A D Y A C Y T J K R P
Y U L E B Q V N O F E P X I L L H D O Y M Y
T J A O H Q X X C S O Q J J W Z A Q K L X D
H X C L F B O I K S P R I N G A Z U R E W F
T G E E P T L A T V M N X Z I H F M E I O P

Page 44: 1. a 2. b 3. c 4. b 4. a 5. Answers may vary.

Page 45: 1. lacewing 2. ant 3. firefly 4. honeybee 5. dragonfly 6. butterfly 7. bumblebee 8. cockroach 9. weevil 10. cricket 11. moth 12. flea 13. beetle 14. housefly 15. grasshopper

Page 47: 1. b 2. b 3. b 4. a 5. b 6. a. dis guis ing b. un sus pect ing c. silk en d. ap pear ance e. ap pe tites f. cam ou flaged g. ma te ri als h. at tacks i. mir a cle j. un pleas ant

Page 50: 1. b 2. a 3. c 4. b 5. a 6. a. fe **ro** cious b. pur **sues** c. es **cape** d. **vis** i ble e. **stalk** ing f. **en** e mies g. **beau** ti ful h. **glis** ten ing

Page 51: 1. **I**daho 2. Gerald **R.** Ford 3. **J**upiter 4. **G**eorgia 5. **S**putnik 6. went 7. Sacramento 8. **R**hode Island 9. **F**ebruary 10. George **B**ush 11. mice 12. **M**ercury 13. right 14. **I**llinois 15. **N**ile
Answer: drugstore beetle

Page 53: 1. a 2. a 3. b 4. c 5. b 6. a. näk-tərn′-l b. per-ĭsh-ĭng c. hăch′ d. ĭ-jĕkt′e. dĭs-gīz′ f. ōd′-ər g. mĭm-ĭ-krē h. sĭ-krē′-shən

Page 56: 1. b 2. a 3. c 4. b 5. a 6. a. **pu**pa b. oc**curs** c. pro**tec**tion d. co**coon** e. **an**chor f. **skit**ters g. **in**sect h. **so**nar i. im**pres**sive j. dis**pleas**ing

Page 57: Cross out the letters below the words *immobile, dislocate, renumber, biannual, unofficial, preheat, misdirect,* and *inadequate.*
Answer: writes-my-name

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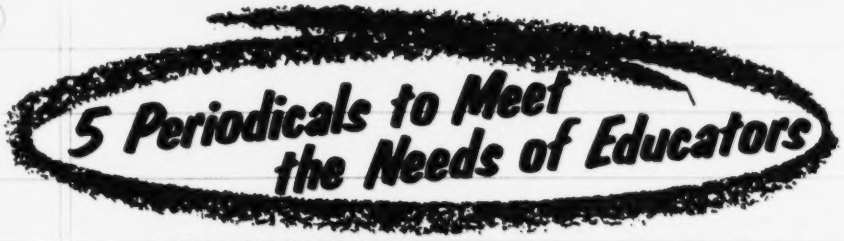

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